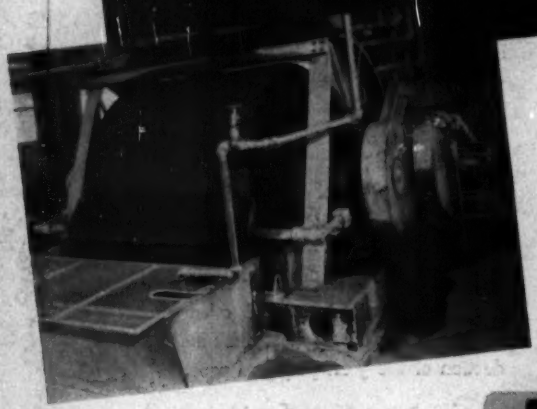
Apr. 13, 1951

WHAT NEW IDEAS ARE BEING FORMULATED ON THE CONSTRUCTION OF CELLULOSE? . . . SEE PAGE 18

WHAT IS THE BASIS OF GOOD FOREST MANAGEMENT? . . . SEE PAGE 28

Paper TRADE JOURNAL

For SWENSON LIME MUD FILTER



- Washes lime mud to less than 1% soda content
- 55% to 60% solids in the washed mud
- Sturdy, stainless-protected construction
- Practically automatic in operation
- Extremely low maintenance cost

Described in Bulletins D-100 and D-108—sent free on request

SWENSON
REG. U. S. PAT. OFF.
SWENSON EVAPORATOR COMPANY
DIVISION OF WHITING CORPORATION
15687 Lathrop Ave. Harvey, Illinois
BIRMINGHAM 3: American Life Bldg.
NEW YORK 7: 30 Church St.
SEATTLE 1: 1326 Fifth Ave.
TORONTO 2: 47-49 LaPlante Ave.

- Evaporators
- Pulp Washers • Deckers • Filters
- Digester Blow Condensers
- Surface Condensers
- Turpentine Condensers • Causticizers

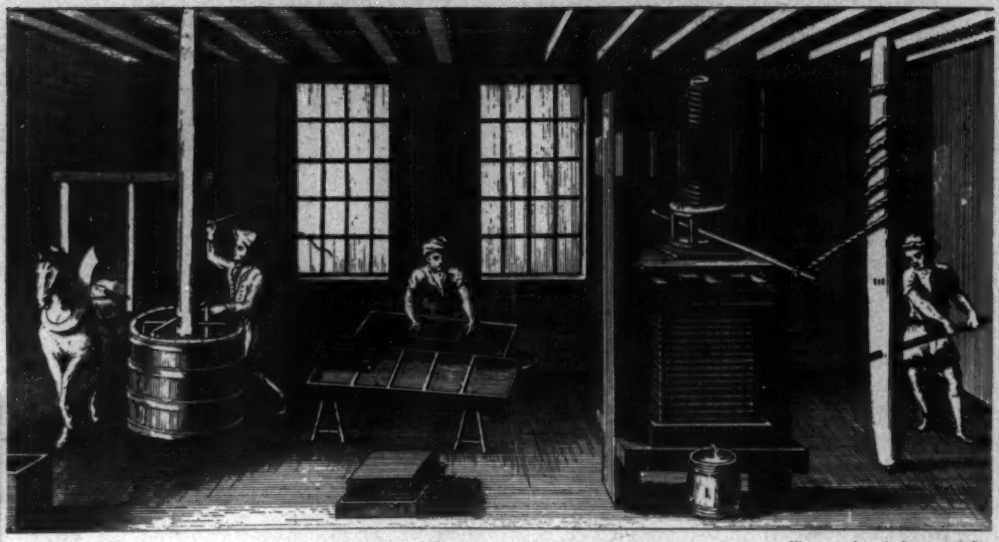


Illustration from the Bettmann Archive

When Paperboard was Made the Hard Way

Nearly two hundred years ago in France, heavy paperboard was used primarily for two purposes —for hat boxes and for the binding of books. The process of making the heavy paperboard from rags was shown in the above illustration in the French Encyclopedia, published by the Academy of Sciences in Paris in 1763.

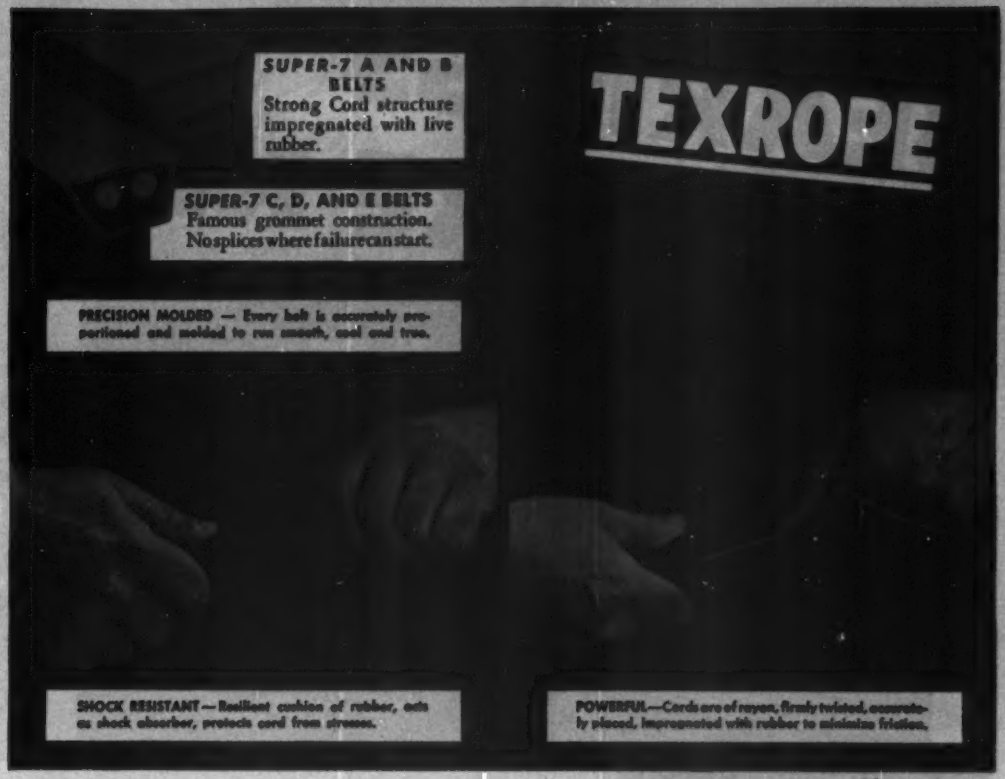
It was sixty-five years later, in 1828, that G. A. Shryock developed at Chambersburg, Pa., a method of making paperboard from straw. "Many predicted," he wrote years after, "that these boards would become one of the indispensable products of the world." But straw was limited in its usefulness. Thirty-seven years later Benjamin Tilghman, a Philadelphia chemist, invented, in 1865, the sulphite process of manufacturing wood pulp. He was the first to see the far-reaching effect of this method in making plentiful paper possible. Such long, slow strides led eventually to the vast paperboard industry of today. Now paperboard is so extensively used for shipping containers and other purposes that it accounts for practically half the total production of the great pulp and paper industry.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

F. C. HUYCK & SONS • *Kenwood Mills* • RENSSELAER, N. Y.

KENWOOD MILLS

HUYCK *Felts*


SUPER-7 A AND B BELTS
Strong Cord structure impregnated with live rubber.
TEXROPE
SUPER-7 C, D, AND E BELTS
Famous grommet construction. No splices where failure can start.
PRECISION MOLDED — Every belt is accurately proportioned and molded to run smooth, cool and true.
SHOCK RESISTANT — Resilient cushion of rubber, acts as shock absorber, protects cord from stresses.
POWERFUL — Cords are of rayon, firmly twisted, accurately placed, impregnated with rubber to minimize friction.

Cool Running... LONG LIVED!

SUPER-7 V-belts give long, satisfactory service even under bad conditions of load, shock and grit.

Tough, double-wrapped cover bias cut for elasticity and impregnated with rubber. Effectively seals out dust, grit, moisture; takes the wear; keeps the belt in shape; and protects cord structure.

But you get more than good belts when you standardize on *Super-7* V-belts. You also get the benefit of the greatest V-belt experience in the world both in the field and factory. You are assured of exactly the right drive for longest life from the wide variety of types and sizes available.

High Capacity Belts

Where space is limited or other special conditions demand heavier duty, the high capacity belt can be furnished in A, B, C, D, and E sections . . . Extra strong cords, special rubber cushion and tough Neoprene cover give them 40% greater capacity than standard belts at proportionately higher price.

V-Belt Drive Headquarters

Your nearby Allis-Chalmers Authorized Dealer or Sales Office can serve all your V-belt needs, whether they be new or replacement V-belts; standard and variable speed sheaves; or speed changers.

Get your copy of the revised 120 page *Texrope* Pre-Engineered Drive Manual from your A-C Dealer or Sales Office or write for Booklet 20B6956A. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3191

Texrope and *Super-7* are Allis-Chalmers trademarks.

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

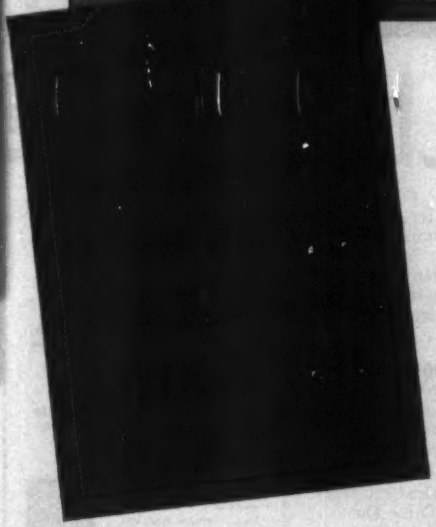
MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

BEARINGS STAY LIKE NEW



You can't buy better lubrication for your dryer roll bearings than *Texaco Ursa Oil X***. In fact, operators who have used it will tell you that, after long months of uninterrupted service, bearings lubricated with *Texaco Ursa Oil X*** are still in good-as-new condition. Oil lines and bearings are completely free of accumulations of paper dust, water and carbon.

*Texaco Ursa Oil X*** is the fully detergent-dispersive oil that cleans as it lubricates. It is highly resistant to foaming, oxidation and sludging . . . protects bearings against rusting, whether running or idle. *Texaco Ursa Oil X*** is the oil recommended by leading paper machine manufacturers.

In your enclosed reduction gears, use *Texaco Meropa Lubricants*. You'll reduce wear and save on maintenance costs. These oxidation-resistant lubricants will not thicken or foam . . . carry heavy loads easily.

Let a Texaco Lubrication Engineer help you set up cost-saving lubrication procedures. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR THE PAPER INDUSTRY

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

ABC

Paper TRADE JOURNAL

ABP

Vol. 132 **APRIL 13, 1951** **No. 15**

FEATURES

	Pages
Now Use Sulphate Process at Luke	11
NPTA Elects	12
Government Gospel	14
A New Construction-Formula for Cellulose as a Work-Hypothesis	18
How are Your Forests Doing?	28
Ruberoid's Newest Roofing Felt Mill	34

DEPARTMENTS

Our Business	7	Materials	42
Trends	9	Financial	44
News of the Week	11	Literature	48
Industrial Section	18	Production	54
Patents	38	Obituaries	54
Prices	40		
CLASSIFIED ADVERTISING	56	ADVERTISERS INDEX	68

PUBLISHED EVERY FRIDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 19

Phone: PLaza 7-2370

GEORGE S. LOCKWOOD, President and Treasurer
ARTHUR S. GORDON, Vice-President
FREDERICK E. WINKLER, Secretary

HENRY J. PERRY, Editor
R. E. THUEMMES, Managing Editor
E. P. McGINN, Industrial Editor
E. P. NUTTALL, Associate Editor

Entered as Second Class matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1951 by Lockwood Trade Journal Co., Inc. PAPER established Feb. 17, 1899, combined with PAPER TRADE JOURNAL, Nov. 16, 1899. PAPER established Sept. 21, 1910, combined with PAPER TRADE JOURNAL, February 19, 1936. All rights to the above titles reserved. Contents of PAPER TRADE JOURNAL, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. PAPER TRADE JOURNAL is indexed in Industrial Arts Index and Engineering Index. Also publisher LOCKWOOD'S Annual DIRECTORY OF THE PAPER AND ALLIED TRADES.

NEXT WEEK

An interesting story of one of the lesser known branches of the Pulp & Paper Industry, the production of wallboard, will be found in Johns-Manville's "How Wallboard Is Produced at Natchez Mills."

REMEMBER THESE DATES

APRIL 17-20: American Management Assn., 20th Nat'l. Packaging Exposition, Auditorium, Atlantic City, N. J.

APRIL 18-20: Second Coating Conference, Technical Assn. of the Pulp and Paper Industry, meeting to be held at the Statler Hotel, Boston, Mass.

APRIL 20: Alumni Dinner of Syracuse University, College of Forestry, Frances Tavern, New York City.

APRIL 26-28: The American Physical Society, Division of High-Polymer Physics, Ninth meeting at the National Bureau of Standards, Washington, D. C.

APRIL 30 - MAY 4: Materials Handling Conference; Held concurrently with Nat'l. Materials Handling Expo., International Amphitheatre, Chicago, Ill.

MAY 4-5: American Pulp & Paper Mill Supts. Ass'n, Northwestern Div., Spring Meeting, Radisson Hotel, Minneapolis, Minn.

MAY 7-11: Forest Products Research Society, Annual Meeting and Industry Show of 1951, Convention Hall, Philadelphia, Pa.

MAY 11-12: American Pulp & Paper Mill Supts. Ass'n., Penn. New Jersey-Delaware Div., at Hotel Easton, Easton, Penna.

MAY 13-16: American Institute of Chemical Engineers, Regional Meeting, Hotel Muehlebach, Kansas City, Mo.

JUNE 3-6: National Paper Box Mfrs. Assn., Haddon-Hall, Atlantic City, N. J.

JUNE 24-28: Superintendents National Convention, Multnomah Hotel, Portland, Ore.

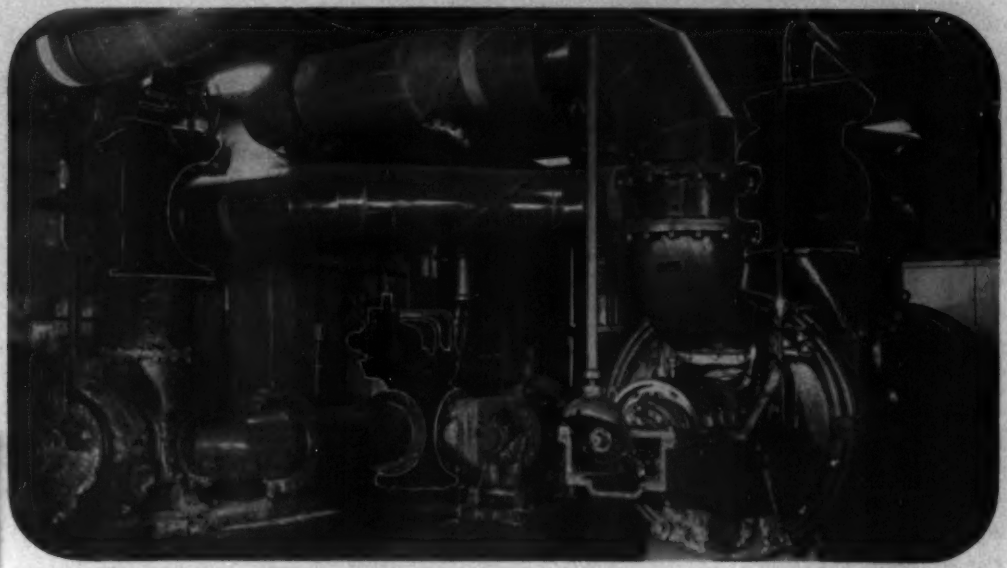
SUBSCRIPTIONS

Payable in advance—Single Copy 15c—U. S. $5.00 per year— U. S. Possessions $7.00 per year.

Canada $7.00 per year—Canadian Funds acceptable.

Latin American Countries $15.00 per year.

All Other Countries $20.00 per year.



valves that operate *with Ease and Certainty*

Only valves that operate with ease and certainty dare be installed in a remote-control valve system.

Only Shartle rotary valves have the design that warrants that dare—and consistently prove the risk justified.

Shartle rotary valves for electric control, or manual operation by lever, chain or hand wheel, are available in all required sizes as straightway, two and three way designs. All cast iron or with corrosion resistant rotors or bodies or both.

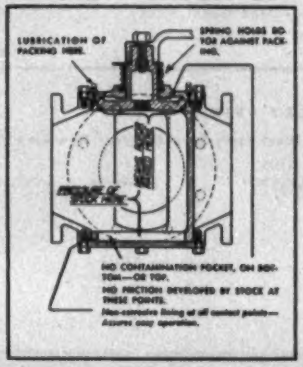
DESIGN CHECK UP

1.
Shoulders at top of chamber are sloping shoulders.

2.
Rotor shaped to pull up flat against those sloping shoulders.

3.
Heavy spring holds rotor up tight.

4.
Spring holds rotor accurately suspended, maintaining close tolerance between rotor and body at all points. (approx. .008" clearance).


LUBRICATION OF PACKING HERE.
SPRING HOLDS ROTOR AGAINST PACKING.
NO CONTAMINATION POCKET, OR BOTTOM—OR TOP.
NO FRICTION DEVELOPED BY STOCK AT THESE POINTS.
Non-corrosive fitting at all contact points—Assures easy operation.

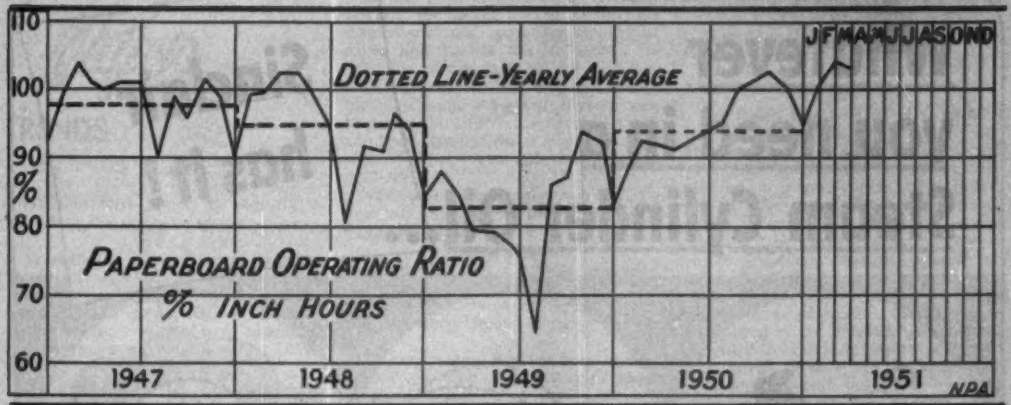
5.
Friction can occur only where rotor fits against top of body, a limited area; hence very limited contact which means easy operation.

6.
No place for stock to lodge, pack and freeze the rotor to the body, accomplished by moving packing in close and eliminating bottom of rotor.

7.
Seal where spring holds rotor up against sloping shoulders accomplished with regular packing, pressure-lubricated.

SHARTLE BROS. MACHINE CO.
MIDDLETOWN, OHIO

DILTS MACHINE WORKS, Fulton, New York
Divisions of THE BLACK-CLAWSON CO., Hamilton, Ohio
Western Sales Office: Mayer Bldg., Portland, Oregon
Southern Sales Office: 937 Coventry Road, Decatur, Georgia
Associate: ALEXANDER FLECK LIMITED, Ottawa, Canada
Subsidiary: B-C INTERNATIONAL, LTD., Greener House 66/68 Haymarket, London, S. W. 1, England



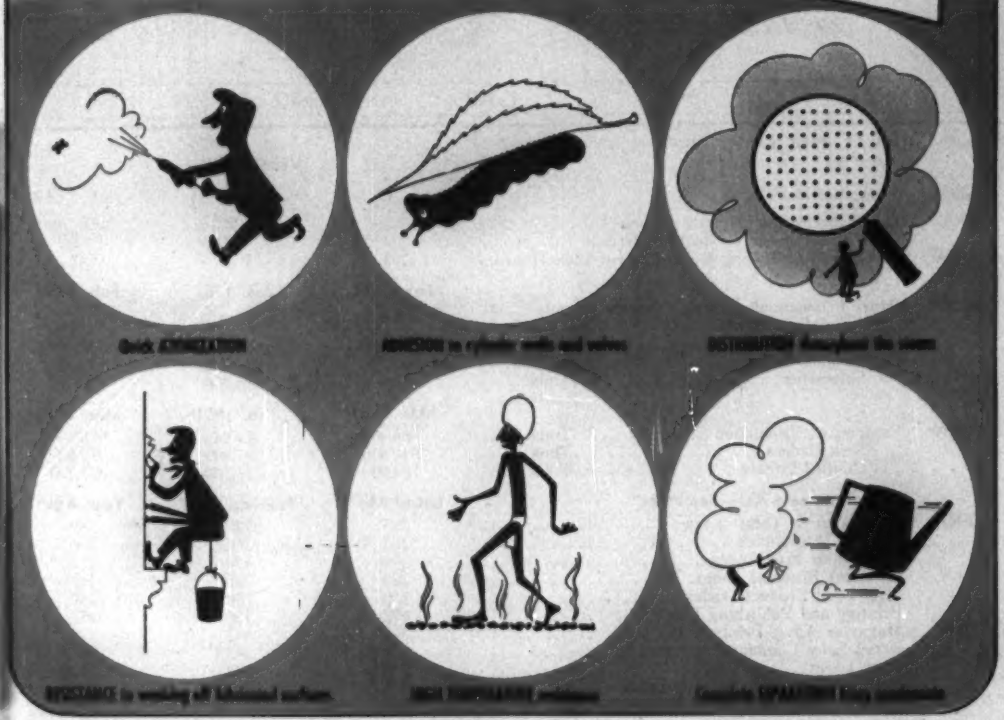
Weekly Brief of Important Figures

Source	Production	WEEK ENDING Mar. 31, '51	Mar. 3, '51	Apr. 1, '50
APPA	Paper Production Percent Capacity[2]	101.8	102.7	97.0
	Unbl. Kraft Paper Production Percent	94.0	98.8	93.3
NPA	Paperboard Operating Ratio Percent Inch Hours	103	105	92
		Feb. 1951	**Jan. 1951**	**Feb. 1950**
APPA	Paper Production[6] (Except Newsprint and Building Papers) ..... Tons	794,000	892,000	726,000
	New Orders ..... Tons	803,000	936,360x	737,000
	Unfilled Orders ..... Tons	942,290	910,835x	516,865
	Shipments ..... Tons	788,000	885,000	730,500
		Mar. 1951	**Feb. 1951**	**Mar. 1950**
NPA	Paperboard Production ..... Tons	984,405	977,946	908,600
	New Orders ..... Tons	946,819	987,609	952,600
	Unfilled Orders ..... Tons	704,936	758,562	371,800
	Our Customers Activities Index[1]	**Latest Mo.[6]**	**Previous Mo.[6]**	**Year Ago[6]**
FRS	Manufactures Total Index	225	227	189
	Durable Mfg. Index	263	266	206
	Nondurable Mfg. Index	194	196	175
	Chemical Products Index	286	286	249
	Mfg. Food Products Index	150	160	149
	Printing and Publishing Index	172	180	157
ODC	Magazine Advg.-Printer's Ink Index	319	342	326
	Retail Sales Combined Adjusted Index	364.4	343.4	299.9
	Drug Index	230.6	224.5	220.9
	General Merchandise Group Index	375.7	332.5	290.3
	Grocery and Combination Index	422.5	424.4	356.0
	Prices Index			
BLS	Consumers Price Index[1]	181.5	178.8	168.2
	Wholesale all Commodities[2]	180.0	175.3	151.5
	Wholesale Foods[2]	182.3	179.0	154.8
	Commodities other than Farm Products and Foods[2]	170.2	166.6	145.8
	Wholesale Pulp and Paper[2]	196.5	189.0	155.9
	Purchasing Power of Dollar, Consumers Prices[1]	55.1	55.9	59.5
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	424.9	415.1	329.2
	Unemployment Compensation Initial Claims (M)	1,080	1,051	1,725
	Miscellaneous Carloadings--Thousands of Cars	1,498	1,814	1,240
	Electric Output (Million KW hr.)	36,726	35,779	31,677
PTJ	Average 32 P & P Common Stocks as of April 3	$37.09	$38.48	$31.33
	Average Indicated Dividends Common Stocks as of April 3	2.34	2.39	2.26

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[6] New 6-7 day basis.
[6] For details see APPA Monthly Statistical Summary—February 1951 Estimated Figures
[6] Latest Month Available on Request
x Revised figures.

Whatever you need in a Steam Cylinder Oil...

Sinclair has it!



No matter what your operating conditions—pressure, temperature, quality of steam; speed, loading; condensing or non-condensing—there is a Sinclair Steam Cylinder Oil made expressly to give the utmost in lubrication satisfaction.

Through proper combinations of steam cylinder stocks and compounding ingredients, Sinclair lubrication technologists have developed a series of steam cylinder oils to fit the operating needs of any installation. There are oils that provide quick atomization... persistent adhesion to cylinder walls in the presence of moisture... rugged, wear-resisting lubricating films under super-heat . . . or complete separation from condensate where that is the dominating requirement.

A Sinclair lubrication engineer will help you select the proper oil for your particular service.

SINCLAIR
Steam Cylinder Oils
for every steam engine installation

For lubrication counsel see your nearest Supplier of Sinclair Products or write Sinclair Refining Company, 630 Fifth Avenue, New York 20, N. Y.

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 11, 1951.

Chief problem facing the industry is named as the complex matter of pricing.

Presentation of the many factors involved: high-priced foreign pulps versus domestic supply, integrated and non-integrated production, etc., has delayed issuance of the new manufacturers pricing regulation by the Office of Price Stabilization.

As first drawn up, the regulation would work a hardship on non-integrated and semi-integrated producers. Base period was set for manufacturers as the second quarter of 1950, a particularly adverse one for the industry, pricewise. Ceilings were to be calculated by adding to the prices of the base period those increases in direct material costs between June 30 and December 31, 1950; and dollar increases in direct labor costs to March 15, 1951.

With increases in wood pulp prices ranging from ½ cent to 1 cent for the first quarter and from ¾ to 5 cents a pound for the second quarter, a freeze at December 31 raw-materials cost-levels would badly squeeze market pulp consumers.

Revisions of the manufacturers' price regulation are reported to allow for liberalizing of the date to March 15, perhaps still later for imported pulps and pulpwoods.

Wood Pulp Ceiling Order Projected

Projected now is a separate ceiling order for wood pulps, with three possible methods of price fixing being discussed. First would be similar to the OPA regulation, a tailor-made order which would set a dollars and cents ceiling price. (Spoken of is $225 for bleached grades, $200 for unbleacheds for imported pulp.) A second method would compute producer ceiling prices on a pre-Korea base which would be rolled forward in the amount of labor and materials cost increases. A third would employ increased cost factors by grades of pulp, industry-wide.

Recently announced second-quarter prices on imported pulps are reported to await final approval by the Office of Price Stabilization. It also is believed that such approval is being delayed for finalization of the projected wood pulp price ceiling order.

An Interim Order

The new manufacturers price regulation which is expected daily is described as an interim order which will be replaced at a later date with specific price ceilings for each grade.

MRO Orders, DO-97

As had been anticipated by industry officials, the broad use of DO-97 for maintenance and operating supplies of paper and boards has so drawn on available stocks that, so far as paper is concerned, its use will be discontinued shortly, informed sources say. In usage, the DO-97 has developed into a rubber stamped order for most supplies of paper required by business and industry.

The GPO is reportedly short of 5,000 tons of fine papers for which it is going to ask directives.

General Business

Originally, Mr. Di Salle concedes, the reasons for imposing price controls were mainly psychological, and to end inventory buying of panic proportions.

The end seems to have been accomplished. Textile manufacturers speak of scare selling on a jittery market, with a fear of inventory recession haunting industry. As manufacturers are pushed by their bankers, they are edging toward dumping of heavy stocks.

In rayons, a limited deferments policy is seen as realistic through the present weak period. Deferments of delivery are for 30 days for the most part, 60 in a few cases of extreme financial hardship. Some weavers have goods available for spot delivery, and without substantial orders, it is doubtful that they will continue at capacity, it is stated. Generally, filaments are in worst condition though all categories are hit.

Paperboard Production and Demand

Drop in paperboard production from 105 percent for the week ended March 24 to 98 percent for March 31 does not denote a drop in demand, it is stated. Officially it is explained that some mills were out of operation on Easter Monday while cleaning operations were under way. They did not start up again until late Tuesday.

Easing in new orders is looked on as spotty. Mills are still booked heavily and are scheduling output to meet allocation bases.

Fine Papers Ease Slightly

Demand for some grades of fine papers is reported to be easing. Sulfites are tight, as are all grades of uncoated stocks. Machine coateds are notably freer with the drop in Government set-aside from 10 percent to 5. Conversion coateds also are available. A quietus characterizes many small printing establishments.

Waste Paper Prices Depressed

Depressed by the weight of salvaged *mixed* grades, *news*, and old corrugated, prices of the low bulkies sagged again this week $3 to $8 per ton. The market is said to be "inundated" with collections, with warehouses and every available spot bulging beyond the point of absorption.

High grades though still strong by reason of a strong wood pulp market, conceivably could be affected by current market softening, it is said.

Mill buying is moderate and cautious in view of OPS release of waste paper price ceilings, due this week. Dealers see the price regulation as contributing an element of stability to this erratic market.

Market Briefs

New Freight Rates.—The 4 percent boost in rail freight rates recently approved for Eastern railroads by the ICC must be absorbed by sellers covered by the general price freeze order, the OPS has ruled. The new increase, which becomes effective April 4, also allows a 2 percent boost for other carriers. (See *Government Gospel* for fuller details.)

Swedish Export Taxes.—Sizable boosts in export taxes of paper and pulp were announced by the Swedish Government on April 2. Levy on mechanical pulp was raised from 40 to 75 krona per ton; on chemical pulp from 150 to 200; newsprint from 50 to 200; cardboard and other paper than newsprint from 100 to 210. (Exchange rate of krona is .1937c.)

Export Trade Expects Relief.—An early move by Washington to aid the flow of goods to historical exporters is awaited by foreign traders. It is reported that a Materials Requirement Order will be issued to provide a voluntary set-aside order which will permit quotas on the basis of historical volume previously assigned to export business.

The Department of Commerce sees its role in the matter as that of getting priority assistance for exporters. It expects the Office of International Trade will be delegated to issue ratings. OIT has submitted to the NPS certain programs on items which it believes should carry priority assistance.

Materials

Casein.—U. S. output of dry casein in February was reported by the BAE at 1,365,000 pounds, 24 percent over February, 1950, and 14 percent over the earlier month for 1951. Manufacturer holdings at the end of February were estimated at 1,760,000 pounds, the third lowest record for the date.

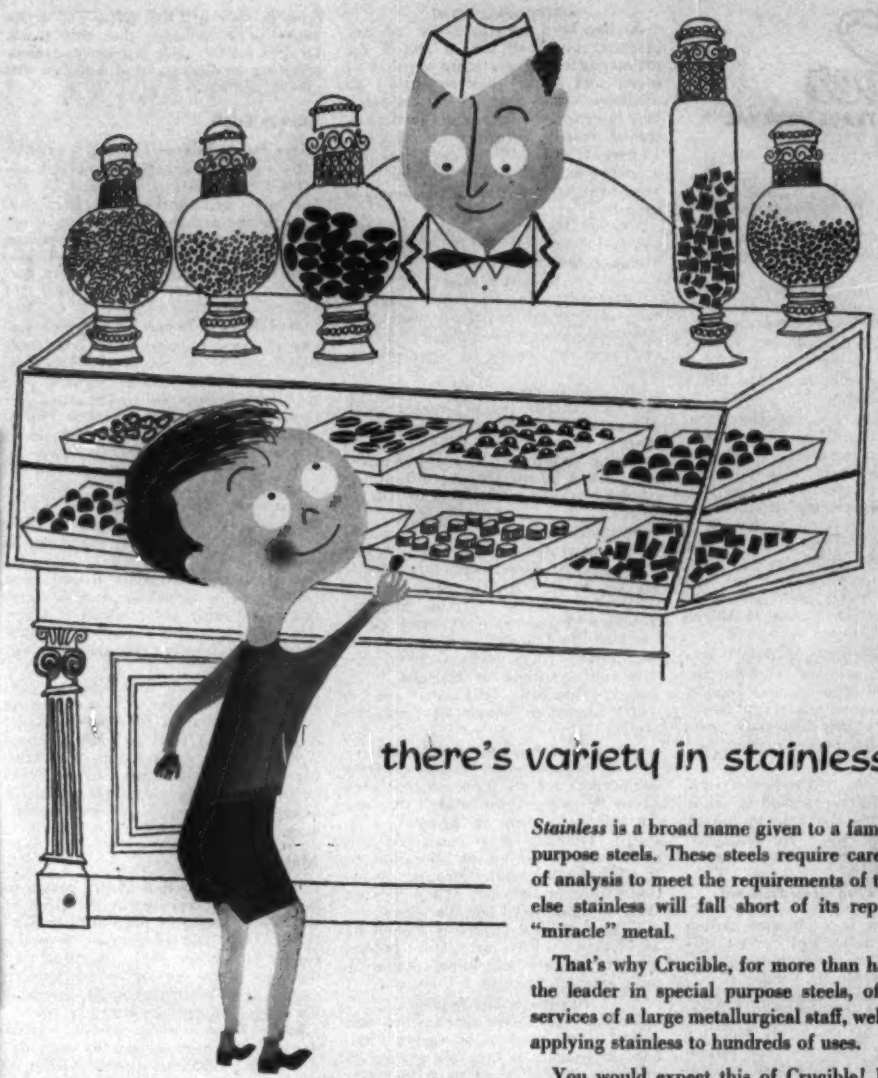
Rosin.—New season which started April 1 is characterized by scarcity. February production was the lowest in history of the trade. March output also was low. CCC holds bulk of rosin stocks subject to special price negotiation. Savannah Exchange badly confused over ceiling regulations on its products. Awaits ESA clarification. Adverse weather also affecting flow of gum. Buying trend moderate.

—E. P. N.

Paperboard Production (Tons)*

	Mar. 31 1951	Mar. 24 1951	Apr. 1 1950
Production	236,532	247,911	203,668
New Orders	257,563	188,865	223,429
Unfilled Orders	704,936	687,931	271,805

* Source: NPA.



there's variety in stainless, too!

Stainless is a broad name given to a family of special purpose steels. These steels require careful selection of analysis to meet the requirements of the user — or else stainless will fall short of its reputation as a "miracle" metal.

That's why Crucible, for more than half a century the leader in special purpose steels, offers you the services of a large metallurgical staff, well-schooled in applying stainless to hundreds of uses.

You would expect this of Crucible! For Crucible was one of the first to build — from the ground up — a completely integrated mill to roll stainless exclusively. If yours is a stainless steel application, call on our unequalled background of experience. CRUCIBLE STEEL COMPANY OF AMERICA, Oliver Building, Pittsburgh, Pennsylvania.

CRUCIBLE first name in special purpose steels

51 years of Fine steelmaking

STAINLESS • HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

News of the Week

Paper TRADE JOURNAL

Now Use Sulphate Process At Luke

LUKE, Md.—Important changes went into effect at the Luke mill of West Virginia Pulp and Paper Co. recently. A new recovery plant, housed in an eight-story steel and tile building at the west end of the mill yard, began operations, enabling the mill to switch over from an old soda process to the modern sulphate method of making pulp.

This change means that the mill can now take better advantage of the supply of hardwoods available in this region and begin to fortify its position in the highly competitive field of publication papers.

The key to the change-over is a large new smelter unit, especially designed to recover the special chemicals used to cook wood chips by the sulphate method. This installation, which took over a year to build, includes a 250-ton recovery furnace, capable of handling more than 600,000 gallons of spent liquor daily, combined with a boiler unit which will produce about 100,000 pounds of high pressure steam per hour.

The building which houses the smelter unit is 50 x 100 feet, towers 104 feet high and is topped by a 67-foot stack, 7½ feet in diameter, clad in stainless steel. The stack is equipped with an electrostatic precipitator, which collects chemical fines carried upward by flue gases. Six hundred tons of steel, 2,500 tons of concrete and more than 91,000 building tile went into construction of the building.

The big smelter replaces seven costly rotary incinerators and thirteen leachers used in the past to recover spent liquor from the soda process. The rest of the pulp manufacturing layout at the Luke mill remains about the same as in the past, except that one new digester of 3,520 cubic-foot capacity has been added to supplement the five digesters formerly in operation. The sixth digester may ultimately allow the plant to increase its pulp production from 170 to about 200 tons per day, bringing the plant's paper and pulp production in closer balance.

Plant officials explained that the new recovery unit should result in considerable improvement in the condition of the Potomac River, from which the plant draws its water supply and into which it returns waste water. It was pointed out that the capacity of the old recovery line was not sufficient to handle all the liquor required for the 170 tons of pulp produced daily at the mill, with the result that some of the weaker wastes escaped into the river. The new smelter not only is more efficient than the old equipment, recovering nearly all the spent liquor for reuse, but is designed for a greater capacity. Engineering estimates indicate that the new equipment will provide considerably more capacity than that needed to handle liquor from the 170 tons now produced and will give the plant leeway for more tonnage if and when further expansion is indicated.

The new recovery unit also is expected to reduce the amount of dirt and smoke usually associated with such operations. The precipitator unit on the stack will recover daily about 15 tons of fly ash, greatly reducing the quantity of fumes and dust previously released into the atmosphere by the old rotary furnaces.

In addition to the production and recovery advantages of the smelter unit, plant officials explained that the new equipment adds considerably to the steam-producing capacity of the plant. Steam is used in great volume for cooking pulp, drying paper, concentrating spent liquor, heating and scores of other purposes. The new boiler unit will produce at great economy about 100,000 pounds of steam per hour, at 600-pound pressure, or about 20 percent of the steam used at the mill. This is considerably more than the capacity of the old rotary furnaces. Almost 12 miles of 3¼-inch steel boiler tubing is built in the new boiler.

Although the smelter was the major project of the past year, another improvement of importance was the consolidation of the paper sheeting and trimming operations in the building formerly occupied by the Old Coating Mill. This new finishing department gives the plant a line of ten cutters and eight trimmers all located in the same building.

Another project of major economic significance is contemplated in the near future, the rebuilding of No. 6 and 7 paper machines, the largest of seven operated at Luke. This project will allow paper to be manufactured at around 1,200 feet per minute, compared to present speeds of about 550 feet per minute. These two machines were converted a few years ago to the manufacture of machine coated book paper, but at present lack the speed necessary to make this grade profitably.

The work will include the installation of longer fourdrinier sections, suction presses, breaker stacks, additional dryers and larger drives on the machines themselves. Auxiliary equipment serving the machines will have to be expanded, too. This means more screening capacity, new and larger pulp refining equipment, a larger save-all system, a new ventilating system, new pumps and pipelines.

BAGASSE MILL FOR SAO PAULO

OTTAWA — A new paper mill using sugarcane bagasse as raw material is being set up at Piracicaba in Sao Paulo, Brazil. It will have an annual output of 10,000 tons of pulp, beginning about mid-1952.

OREGON PULP IMPROVEMENTS

SALEM, Ore.—Directors of the Oregon Pulp & Paper Co. have authorized an investment of approximately $750,000 designed to effect a saving of from 20 to 25 percent in raw wood and generally increase the efficiency of its mill.

A new hydraulic barker is on order. Additional installations will include a crane for handling logs, a carriage saw for reducing the size of large logs, and a new chipper.

BEMIS COMPLETES ADDITION

The Bemis Bro. Bag Co. announces the recent completion of multiwall plant and storage facilities at Peoria, Ill. costing more than half a million dollars. The new building and storage space, measuring approximately 330' x 200', are in addition to the company's multiwall paper shipping sack manufacturing plant in Peoria.

LEATHERS RESIGNS FROM NPTA

W. G. Leathers has resigned as executive secretary of the National Paper Trade Assn. to become associated with Hubbs Corp. as assistant vice-president with headquarters in New York City.

Mr. Leathers joined the association staff in 1943 after obtaining his release from the Wrapping Paper Section of OPA. He became executive secretary in the spring of 1949 succeeding A. H. Chamberlain who joined the staff in 1927 and who continues active as assistant to the president. In his official capacity, Mr. Leathers has traveled tirelessly and has gained wide acquaintance and favorable recognition throughout the country with mill men as well as merchant members of the organization. He will assume his new duties about the middle of April, providing ample time, however, to assist in handling post-convention work for the association.

President Pollock and his official associates in the National Paper Trade Assn. regret the loss of Mr. Leathers as the head of the association office but are pleased that in his new connection he will continue as a member of the association.

The problem of finding his successor is a difficult one and no hasty action will be taken. It is felt that the present staff are well able to carry on until such time as a qualified successor to the office of executive secretary can be selected.

NPTA ELECTS

E. P. Magel, Crescent Paper Co., Indianapolis, was elected president to succeed L. S. Pollock. P. M. Jons of Storrs and Bement, Boston, was elected vice-president of the fine paper division. R. E. Knox, Knox Wrapping Paper Div., J. O. Bulkley, Bulkley Dunton & Co., Inc., Treasurer.

PEOPLE

GENERAL LUCIUS D. CLAY returned to his position as chairman of the board of Continental Can Co. April 2 after four months service as special assistant to Charles E. Wilson, director of the Office of Defense Mobilization. General Clay was granted a part-time leave of absence by the company's board of directors last December. He resigned the defense mobilization post as of March 31 because the job of setting up the organization of the program which he had agreed to undertake was completed. Although General Clay will be subject to call back to Washington for special advice and aid as a consultant, especially if a material shortage becomes acute in the fall, he will devote full time in the future to his Continental position.

WILLIAM F. "BILL" ERISMAN, vice-president and general manager of the Erving Paper Mills, Erving, Mass. has again been recalled to Government service in an advisory capacity. W. H. Harrison, Administrator of N.P.A. has requested that "Bill" serve in a consultive capacity on a Paper and Board Converted Products National Industry Advisory Committee. He was a familiar figure in the many meetings held in Washington during 1944 and 1945 serving as a consultant in the Pulp Allocation Office of W.P.B. As a result of Mr. Harrison's invitation Mr. Erisman has accepted the call to duty and is prepared to give Washington officials the benefit of his life long experience in our industry. In addition to government consultant work Mr. Erisman currently is a member of the Executive Committee of the Paper Napkin Assn. A member of the Board of Directors of the Assn. of Pulp Consumers, and a member of the Board of Governors of the American Paper and Pulp Assn.

T. H. B. SMYTHE, president J. L. N. Smythe Co., Philadelphia, has been requested by G. J. Ticoulat, director of the Pulp, Paper and Board division of the National Production Authority, to serve as consultant in both fine and wrapping paper distribution. It is understood that Mr. Smythe will accept.

FRANK POTTER, formerly in charge of New York Sales of the Westfield River Paper Co., Inc., and its subsidiary, the Glassine Paper Co., has been appointed assistant to the president. His headquarters will now be in Russell, Mass. RUSSELL L. SHANNON, who has a life-long background in the paper industry, being formerly connected with the Crown-Zellerbach Corp., has replaced Mr. Potter as New York manager in charge of the company's offices located at 405 Lexington Avenue, New York City.

J. GORDON CHALMERS, manager of operations for the Bathurst Power & Paper Co., Ltd., at Bathurst. N. B., has been elected a director of the company.

J. D. ZELLERBACH, president of Crown Zellerbach, has accepted the chairmanship of Manpower Resources Council of Columbia University. The project will study where manpower wastes occur, develop methods of better utilization, and increasing the potential supply.

TED R. NEELY of Marathon Corp., Menasha, Wis., has been named advisor to the Office of Price Stabilization in Washington, D. C., on a temporary basis, and left for the capital on April 2. His specific job will be the developing of price regulations for the waxed paper industry. Mr. Neely served the government in a similar capacity in 1942 and '43, when he went to Washington as chief of the converted products section of the O.P.A.

HUBBS EXPANDS

Hubbs Corp. announces the purchase of the entire inventory and certain physical assets of the wholesale wrapping paper division of Paper Manufacturers Co., Philadelphia, Pa.

This move coincides with the merger of W. B. Killhour & Sons, wholesale paper merchants, Philadelphia and York, Pa., with the Hubbs Corp. The Paper Manufacturers Co. wrapping and industrial jobbing business is being joined with the Killhour operation and both will function under the name of W. B. Killhour & Sons Division of Hubbs Corp. Warehouse will be maintained at 25th and Reed Streets, Philadelphia. Branch office and warehouse will be continued at York, Pa.

The entire sales organizations of both these businesses will be continued intact with general offices at W. B. Killhour & Sons, 10 Chestnut Street, Philadelphia 6, Pa.

This combined operation will be under the general management of W. Brelsford Killhour assisted by his son, William G. Killhour, with W. Brelsford Killhour to be elected to the board of directors of Hubbs Corp.

The branch operation in York will be managed by William B. Yeagley and Norman M. Callahan, Jr.

Frank O'Neill, president of Paper Manufacturers Co., states that the efforts of his company will be devoted exclusively to the greatly expanded manufacturing and converting business for which they are now building two modern plants, one in Bustleton, Philadelphia and another in Indianapolis, Ind.

The merger and purchase adds a major division to the Hubbs Corp. The W. B. Killhour & Sons Div. will cover the important trading area of metropolitan Philadelphia, Eastern Pennsylvania, Southern New Jersey and Delaware.

MADE TO LAST... it's Stainless Steel

HOW MANY TIMES during recent months have you stopped in front of a vital piece of equipment and said to yourself, "I'm glad it's Stainless Steel"?

Like thousands of other users, your selection of Stainless Steel equipment has been justified by its performance. Because Stainless equipment is made to last, it reduces production losses and postpones equipment replacements that are so difficult (sometimes even impossible) today. Stainless Steel has exceptional resistance to the corrosive action of pulps, paper mill stocks and white waters, caustic liquors and cleaning solutions. And its strength, toughness and hard, dense surface give it the ability to stand up under severe and continuous service.

Include Stainless Steel equipment in your plans for future improvements. By using U·S·S Stainless Steel, you can make sure you get a perfected, service-tested material that has proved unsurpassed for keeping equipment on the job.

This acid tank at the Pulp Mill Pilot Plant of Eastern Corp., Bangor, Maine, is made of Stainless Steel to assure long, trouble-free service. Piping and valves also are Stainless Steel.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · COLUMBIA STEEL COMPANY, SAN FRANCISCO
NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM · UNITED STATES STEEL COMPANY, PITTSBURGH
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

1-301

UNITED STATES STEEL

GOVERNMENT GOSPEL

Container Situation

WASHINGTON, D.C.—Container manufacturers are deluged with orders, while facing raw material shortages similar to World War II, Commerce Department reported in its Containers and Packaging Industry survey.

Even though defense requirements were not heavy, demand for containers and packaging materials greatly exceeded production in the last quarter of 1950, the report stated. Advance ordering was a factor, it was pointed out, civilian users attempting to build up inventories. As a result, manufacturers moved toward maximum production and full utilization of available facilities.

This increased activity had the effect of drawing off raw materials and many container manufacturers soon found themselves on a hand-to-mouth basis. NPA is now in a position when necessary to allocate and direct raw materials as well as finished products to essential civilian and military channels, the report added.

Highlights of the report showed:

Paper Containers: demand reported 30 percent above production; D.O. rated orders increasing, with production at capacity. Some raw materials in short supply.

Glass Containers: sellers' market as metal shortage swings users to glass. Paper board for shipping containers scarce.

Folding and Set-up Boxes: production at 4-year peak, but 6 to 8 weeks' order backlog reported; 25 percent increase in demand expected.

Tight and Slack Cooperage: growing demand reported.

Steel Drums: tight steel supply affecting production, orders now backlogged 6 months.

Paper Bags: prices up 30 percent since Korean war. Mills reporting 60 to 90 days' delivery lag.

Certificates of Necessity

WASHINGTON, D.C. — Additions to the list of Certificates of Necessity issued prior to March 14 are:

Rayonier, Inc., Cellulose	$73,610
Rayonier, Inc., Cellulose	1,412,418
Rayonier, Inc., Cellulose	1,507,980
Green Bay Pulp & Paper, Semi-Chemical & Corrugated Liner Board	197,116
International Paper Co., Dissolving Pulp	22,034,300
	$26,025,424
Previous Total	174,596,361
	$200,621,785

Freight Increase Absorption

The freight increase must be absorbed, is the latest interpretation from OPS as of April 4. In order to clarify the situation, the rules in brief are:

1. Inboard freight increases incurred by the seller, cannot be added to the seller's ceiling price.

2. Outbound increases are effected as follows:

a. If seller quoted delivered price, increase cannot be passed on, except if delivered price was adjusted to actual delivery cost.

b. If sold f.o.b., adding actual transportation cost, increase can be passed on.

c. If sold f.o.b. plus transportation and transportation was not actual cost, sale is to be classified as under para A and cannot be passed on.

Cotton Duck Production

WASHINGTON, D.C.—The National Production Authority, U.S. Department of Commerce, issued two orders designed to maintain production of cotton duck to meet defense and essential civilian requirements.

Although the current annual production rate of approximately 300 million yards is well above the 1946-48 average of 225 million yards, more production is needed to meet heavy military, industrial and agricultural requirements. Cotton duck production is now running at less than half the World War II peak of 606 million yards a year attained in 1942.

As an interim measure, pending future allocation of cotton duck, one of the orders issued (M-53) requires cotton duck producers to accept defense rated (DO) orders up to 80 percent by weight of their scheduled production, beginning April.

Claims Government Caused Failure

OTTAWA—E. E. Johnson, president of the Great Lakes Lumber and Shipping Ltd., of Fort William, Ont., in a brief presented to the Ontario Legislature's standing committee on lands and forests alleged that the Ontario Government's methods had led to putting the company out of business by protecting the pulp and paper companies in that area of Canada. He charged the methods used have deprived the firm of the right to timber for saw-log purposes, eventually forcing the firm to shut down and putting out of work over 3,000 men.

According to the claim, the Ontario Government has not carried into effect the recommendations of the Kennedy Report on Forestry to provide timber for lumbering companies and as a result practically all of Northern Ontario's huge timber tracts went to eight big companies.

In addition to other charges, Mr. Johnson has gone on record with the assertion that in time his firm was left without any source of saw-logs after government directives forcing pulp and paper companies to produce saw-logs ran out and the Johnson's firm agreement with the Great Lakes Paper Co. had expired.

Torquay Conference

The Torquay Tariff Conferences are coming to a close. Initialing of agreements is rapidly being completed. Due to tight censorship little information is available on actual results. British Commonwealth nations have refused to eliminate imperial preferences, thus providing a stumbling block to lower tariffs. It is understood that the United States got good agreements with France, Sweden and Italy. Good to the State Department means a long list of reductions under "Most Favored Nations" clauses, the same rates would apply to the Commonwealth nations, so that Canada would receive the same treatment as Sweden on paper imports.

Official rates will not be released until after May 9. The agreements will take effect upon signing April 21.

Export Permits

OTTAWA—The list of products for which export permits are now required include the following, according to Canadian Government: Woodpulp, sulphite, sulphate, soda and screenings (all countries, excluding the United States).

Wood Pulp Prices

WASHINGTON, D.C. — OPS has called for data from the Domestic Wood Pulp Producers Industry Advisory Committee indicating that the agency is considering a special ceiling price regulation for the industry.

The committee was asked to furnish cost figures for producing standard types and grades of wood pulp, quarter by quarter for all of 1950, and other data covering base periods.

Meeting with OPS the past week committee members took up a tailor-made dollars and cents ceiling price regulation that would fix uniform prices on standard types and grades of wood pulp for the entire industry. This would apparently follow the old OPA Regulation 114, which industry representatives indicated, would be acceptable.

Under an alternative method of regulation discussed, each manufacturer would compute his own ceiling prices by taking his prices that prevailed in some pre-Korea base period, and bringing them forward in relation to increases since in his labor and material costs. A third method would employ increased cost factors for the respective kinds and grades of wood pulp which would be identical throughout the industry, resulting in a variation in prices from one manufacturer to another only in proportion to the variation that existed in the base period.

● *"you name it... I helped make it!"*

Glue for antagonistic surfaces

I'm never perplexed very long. About glue! Even when laminating difficult and varied surfaces that *bristle* with resistance. Like acetate, lacquer and polyethylene-coated kraft. Or pliofilm, acetate and polyethylene sheeting. For advertising displays. And packages. Emulsion adhesives dry to a clean, colorless, transparent film. Eliminate inflammable solvents. Reduce drying time from days to several hours.

... and listen!

● *"you name it ... I helped make it!"* Watch label adhesives at work. Protecting product identity by holding tight to cellophane, foil or paper labels. And to bottles that often reach labeling machines greasy, wet or hot. Filled with mineral oil, olives, salad dressing. The NATIONAL touch is everywhere. Glue applied through imaginative research and service. To every item of daily life.

STARCHES National ADHESIVES

NATIONAL STARCH PRODUCTS INC.

Executive Offices: 270 Madison Ave., New York 16, N. Y. • Plants: Dunellen, N. J., Chicago, Indianapolis, San Francisco. • Sales Offices: All principal cities. • Canada: Toronto and Montreal. • England: Slough. • Holland: Veendam.

Starch for Paper... from Pulp to Packaging!

free folder offers useful information on starches and adhesives for the paper industry

Here's the folder that was so much in demand at the TAPPI-APPA show! A complete listing of National Starches and Adhesives for paper making . . . coating . . . converting. Every requirement you can think of, *plus* the latest developments to come out of our research laboratories!

Of certain interest to paper technicians are:

HYDROSEAL, a new beater additive that closely approximates the gelatinous substance formed by pulp hydration . . .

FLOKOTE, an unusually stable oxidized starch for coating operations . . .

DURA-BOND, for combining corrugated board. Permits starch savings up to 10% . . .

—and a number of quality dextrines and starches that are uniform in working properties, texture and color . . . a complete line of "fluidities" . . . acid and chlorinated conversions. Specialties for beater, tub and calender sizings, brush or machine coating and greaseproofing. Also, converting adhesives for laminating, combining, mounting, heading and wrapping. Special formulations including taping adhesives for corrugated boxes . . . heat seal adhesives . . . tube winding glues in cold-water swelling, cook-up and prepared form.

Title: "The Amazing Versatility of Starches for the Paper Industry." Copies available upon request. Clip the attached coupon or write NATIONAL STARCH PRODUCTS INC., 270 Madison Avenue, New York 16, N. Y.

Please send a copy of the new National Starch folder for the paper industry.

Name_____

Title_____

Company_____

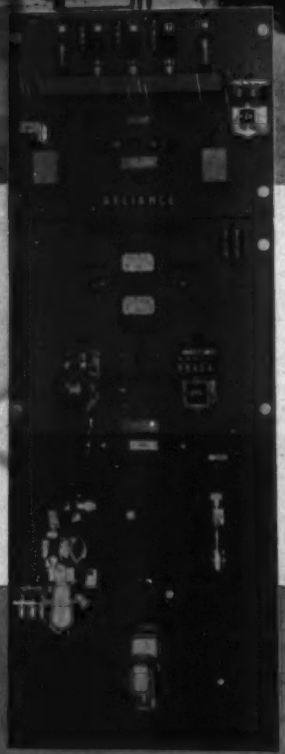
Address_____

City_____ Zone___ State_____

RELIANCE Sectional

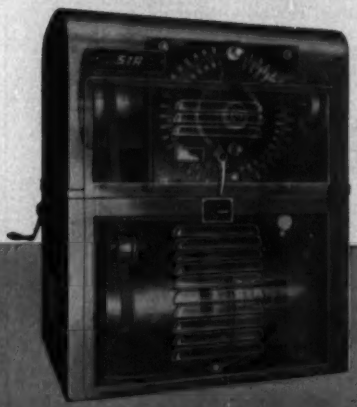
Maintain dependable, precise speed relationships

Reliance Sectional Drive controls this book machine which not only forms and coats, but also supercalenders the sheet in one continuous operation.



Simplicity is keynote of typical Reliance individual section panels for modern paper machines.

RELIANCE SIR (SECTION INTERLOCK REGULATOR)



Reliance Sectional Interlock Regulator holds draws accurately at all speeds, is rugged, compact and dependable.

The Heart and Brain of the Drive!

Supplied as an integral part of each drive motor in the system, the Reliance SIR is a simple, mechanical gear type differential regulator. Governed by a master speed reference for the entire motor drive, the SIR maintains the exactly correct speed relationship between sections. Compensation for shrinking or stretching of material can be made from the front or back side of the machine by means of speed adjustment of a Section Motor. Compactly designed and ruggedly built, the SIR has achieved a reputation for long, trouble-free service in a wide range of co-ordinated industrial processes requiring extremely accurate synchronization of motor drive speed.

"MOTOR-DRIVE IS MORE THAN POWER"

Paper Machine DRIVES

between all the sections of any paper machine...

Use of Reliance Sectional Drives reduces down time to provide ma- mum tonnage and profits. Above: 236" high-speed newsprint machi...

...the co-ordinated drives you can depend on for maximum production of paper o UNIFORM WEIGHT and QUALITY!

Employing a principle which has been tested and proved for years in more mills than all other systems combined, the Reliance Sectional Paper Machine Drive provides unsurpassed ease, accuracy and dependability of control over the paper-making process through all sections of any machine. Here is the simplest, most practical and economical means of maintaining precise speed relationships and correct draw adjustments between all sections.

Reliance Sectional Paper Machine Drives are planned to suit the individual application by specialists backed by the Reliance experience of nearly 50 years in engineering co-ordinated motor drives. They are equally effective on the largest board machines, on wide, high-speed news machines, on fine paper machines. And a versatile mechanical "brain", the Reliance (SIR Section Interlock Regulator), makes each Reliance-engineered drive readily adaptable to all practices and conditions in the operation of any machine.

When purchase of a new machine is being considered or planning for a change-over to sectional drive is begun . . . it will pay you to have all the facts on how a Reliance Sectional Paper Machine Drive can pay you important dividends through maximum sustained production and low-cost performance. Call in a Reliance Application Engineer.

Three Reliance SIR Regulators mounted integrally with Reliance Type 'T' Heavy Duty D-c. Motors on Sectional Paper Machine.

RELIANCE ELECTRIC AND ENGINEERING CO.

1099 Ivanhoe Road, Cleveland 10, Ohio • Sales Representatives in Principal Cities

A New Construction-Formula for Cellulose as a Work-Hypothesis

DR. A. CMENTAK[1]

There is a growing tendency to construct the formula of macro-molecular compounds in such a manner that it somehow directly reflects the technical qualities of that material. The long chain of the formula for poly-vinyl-chloride for example is written zig-zagged and supposed to be felted to explain its properties; or to indicate the flexible nature of caoutchouc the formula for it represents itself folded to suggest its compressibility. Until now the manifold formulas for cellulose did not support such a conception, and many of its chemical properties had been left unexplained.

The here shown construction-formula for cellulose as a spiral and a sort of a strutted molecular "edifice" chiefly shall aid the technique to gain a plastic view with the aim of developing new ways of unlocking of cellulose containing material, the handling of alkali-cellulose, xanthate, viscose or lignin. If it is our aim to relieve cellulose chemistry from a certain workman-like embarrassment in which it sometimes still is held as a reminder of the old days of papermill technique, then our new formula, of course, must give full figurative explanations for every reaction of the cellulose, especially for properties or reactions hitherto unexplained.

We wish however to confess beforehand that our spiral formula by no means is in accordance with any of those cellulose formulas which have been developed during the last twenty or thirty years and for which most of the authors did claim the scentifically secured basis. Many of our assumptions and suppositions will be strange and even absurd to the critical reader, and it is only until the end of the development to the spiral-formula is gained that the reader should make his decision.

To begin with, we may as well at once state that example, which has to play an important part with our spiral-formula.

Usually we write the formula for water ..... H_2O

or in some cases we find it written ..... H-O-H

but for our purpose we want to write this formula for water .....

just to indicate that we want to concede to the O-atom a certain amount of free valency-power.

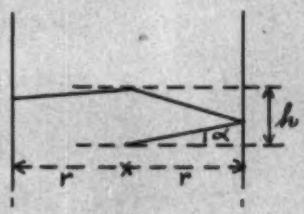


Figure 1.

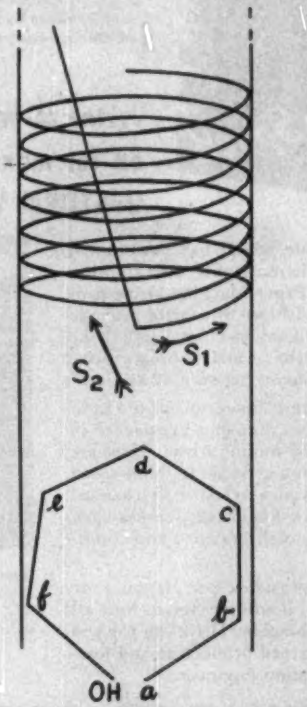


Figure 2.

Around a cylinder with the radius r we draw a slightly ascending spiral S_1. The altitude of each single ring of the spiral shall be h, and the angle of its ascension shall be α. (See *Figure 1*)

With the radius r we now divide continuously the spiral S_1 thus gaining the first six points a, b, c, d, e and f, and then further a_1, b_1, c_1, d_1, e_1, and f_1, then a_2, b_2, c_2, and so on. The projection of the figure a-b-c-d-e-f-a_1 shows itself as a "not quite closed hexagon." (See *Figure 2*).

If now the spiral S_2 ascends turning up to the right, then the connection-line a-a_1-a_2-a_3-a_4- . . . (or the connection between all b-points etc.) is a spiral too, which however turns up the other way round.

This new spiral, marked S_2, ascends much steeper than the spiral S_1.

If however S_1 turns up to the left, then S_2 goes round the opposite way.

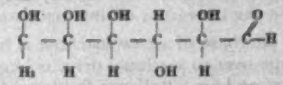
After a certain number of "not quite closed hexagons," which we may calculate out of h, r, and the angle α, one point will reappear situated precisely above the first point a.

Until that point is reached, the spiral S_2 made only one turn, which means that it formed up to that point only one ring of the spiral S_2.

For the sake of clarity we wish to introduce a few notions and names: those "not quite closed hexagons" we shall call henceforth "polym-links." One complete ring of the spiral S_2 we will call "polym-cut." And if we want to speak of the whole length of the spiral S_1, then we speak of the "polym-grade."

So, to give an example, we say now: Polymgrade 540 includes 6 polym-cuts at 90 polym-links each.

To build up our spiral-formula we make use of the old classic formula for glucose from Emil Fischer:



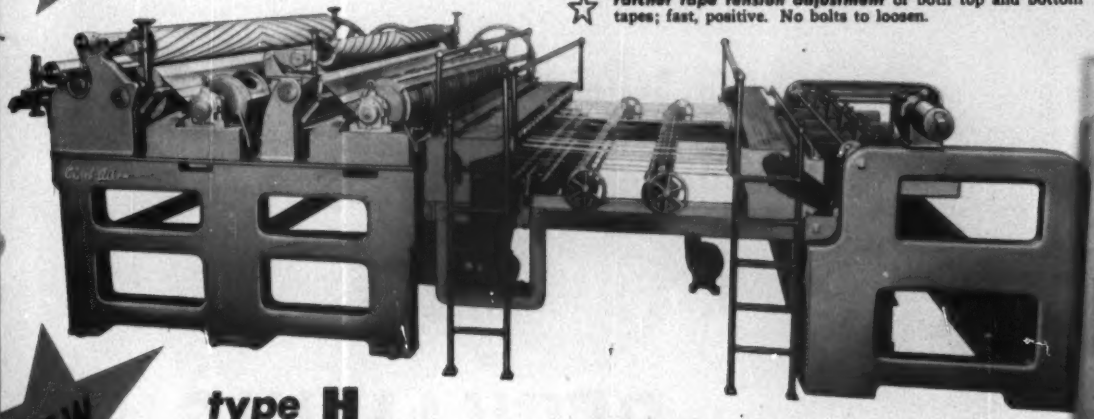
If we now continuously connect a quantity of glucose units with each other in such a way, that from one aldehyde group of the glucose and the primary alcohol-group of the following

[1] Chemical Laboratory Hamburg-Blankenese, Hamburg, Germany.

the sheeter you've wished someone would build

star-studded with NEW cost-cutting efficiency features

- ***oversize pinch roll,*** 12" diameter, gives more gripping surface to prevent slippage.
- ***sand-blasted draw roll,*** a Clark-Aiken innovation, reduces possibility of slippage; 18" diameter.
- ***pinch roll adjustable*** in three positions to increase drawing power for multiple sheeting.
- ***one-piece knife assembly,*** bed knife and cylinder housings prevents distortion when squaring sheet.
- ***lifetime tapes,*** 4" wide and much heavier, wear indefinitely, stretch less.
- ***ratchet tape tension adjustment*** of both top and bottom tapes; fast, positive. No bolts to loosen.



NEW

type H Clark-Aiken

High-Speed Heavy-Duty CUTTER-LAYBOY UNIT

for Board, Pulp, Multiple Sheeting

drawing from as many as 32 rolls of 8-pound paper at one time.

- ***scale slitter and jogger adjustment*** permits positive, accurate alignment without tape measure.
- ***independent-motor-driven cam-operated joggers*** with oilite bearings for smooth, quiet operation.
- ***independent-motor-operated chain-and-sprocket lowering device,*** electronically controlled. No worn or bent screws. Faster return.
- ***unit design*** — cutter, delivery, layboy coordinated for unit operation. Heavy, box-type end frames, large-section rolled steel shapes, oversize roller bearings throughout, for smooth, vibrationless operation.

plus these ever-popular Clark-Aiken features:

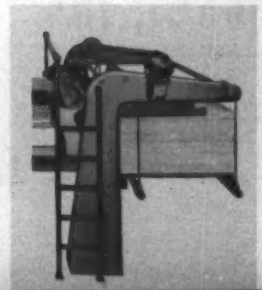
Patented Scissors-Action "Spiral Shear" Knife; Infinite Sheet Length Range within cylinder capacity; Infinite Paper Travel Speed, 0 to 800 feet per minute; Adjustable Lead-In Rolls take curl and wrinkle out of sheets before slitting; Ball-Bearing Shearing-Type Slitters; Adjustable Take-off Tapes; Variable Overlap up to 8 to 1; Adjustable Tape Grip.

Available in Simplex and Duplex types — 76 to 220 inches maximum width capacity—with standard 18" or 25" knife cylinder. Write for Bulletin H.

NEW

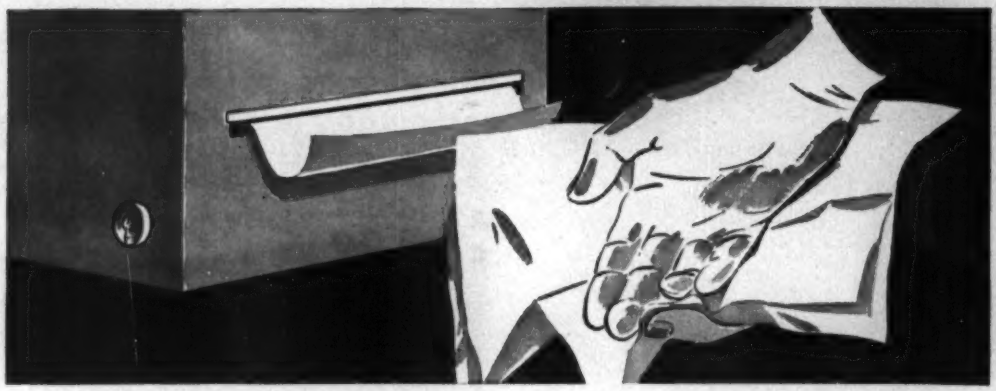
overhanging-type layboy

now available for all Clark-Aiken Cutters, permits side pile removal, greater pile height, fast skid removal and replacement.



THE *Clark-Aiken* COMPANY

LEE, MASSACHUSETTS



for better all-round WET STRENGTH PAPER

USE P-630 BECKAMINE

RCI's P-630 Beckamine is a strength producing resin with a proven ability to improve paper properties. Because it increases wet strength, dry tensile and Mullen strength, P-630 is ideally suited for use in the production of butcher wraps, paper toweling, bag stock and liner board. In addition, P-630 aids in the retention of clay, rosin size, starch and other beater additives. Low in price, yet high in quality, this resin can be used with either bleached or unbleached paper stocks. For further information, together with a working sample, write direct to the RCI sales department at Detroit.

REICHHOLD CHEMICALS, INC.

RCI

General Offices and Main Plant, Detroit 20, Michigan

Other Plants: Brooklyn, New York • Elizabeth, New Jersey • South San Francisco and Azusa, California • Tuscaloosa, Alabama • Seattle, Washington Chicago, Illinois • Liverpool, England • Paris, France • Sydney, Australia • Sassenheim, Holland • Naples, Italy • Buenos Aires, Argentina Hamburg, Germany • Toronto, Canada • East London, South Africa • Osaka, Japan • Vienna, Austria

SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • PHENOL • GLYCERINE PHTHALIC ANHYDRIDE • MALEIC ANHYDRIDE SODIUM SULFATE • SODIUM SULFITE

With a dividend in SAFETY...

Looking for a formula for extra production? Have you considered a boost in your drying rates of 15-25% with *no* increase in steam pressures . . . or a boost up to 50% with *additional* steam pressure?

For such extra capacity is within your reach with Lukenweld Jacketed Steel Drier Rolls. Hundreds of such driers, in use in industries across the country, have already proved the "plus" they offer in production.

Featuring assured safety through use of high strength rolled steel plate, Lukenweld drier rolls permit operation at pressures as high as 350 psi or higher . . . a protection feature insurance companies have been quick to accept.

And you'll find, in addition, that these driers *stay round*, assure long life *as well as* higher production. One Lukenweld Jacketed Steel Drier Roll—*in use almost continuously for more than 16 years*—was found to be still within a tolerance of 0.004". (The machining tolerance was 0.005"!)

Besides improved drying, Lukenweld Jacketed Steel Drier Rolls offer you the advantages of reduced installation and maintenance costs, more flexible operation. Over 35% of our customers have ordered additional drier rolls. This is evidence of Lukenweld's specialized manufacturing and engineering ability. Such know-how—plus Lukens' 140 years experience in producing specialty steels is back of every Lukenweld job.

For information on drying and other processing machinery for the pulp and paper industry, write Lukenweld, Division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

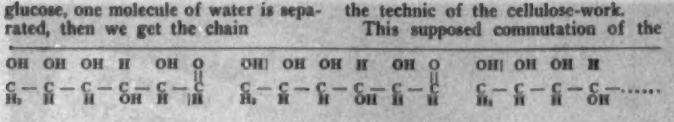
Improved machinery for improved processes through engineering

LUKENWELD

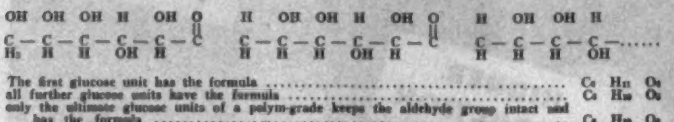
A DIVISION OF LUKENS STEEL COMPANY

LUKENS

glucose, one molecule of water is separated, then we get the chain



or

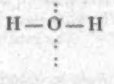


The first glucose unit has the formula ..... $C_6\ H_{11}\ O_5$
all further glucose units have the formula ..... $C_6\ H_{10}\ O_5$
only the ultimate glucose units of a polym-grade keeps the aldehyde group intact and has the formula ..... $C_6\ H_{10}\ O_6$

The very first CH_2OH-group in the chain also is untouched. This group, as well as the ultimate aldehyde group, provided that the chain is long enough, or that the polym-grade is high enough, have no analytical nor reacting influence, and the nearest value for the thus formed cellulose is represented by the sum $(C_6H_{10}O_5)_x$.

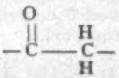
But if we inspect Fischer's glucose-formula somewhat closer, we will find, that the one isolated secondary alcoholic group, similar as an asymetric C-atom for example, exercises a certain dictate on the position of *all other groups*, and we shall see, that this dictate positively *commands the function* of every molecular-group in our spiral-formula for cellulose.

That isolated secondary alcoholic-group has absolutely a key-position as far, as the cellulose reacts as a monovalent alcohol; normally that group alone is kept intact as hydroxyl-group. But that same group may, as we shall see, under the influence of special conditions, reactivate at the most two other groups, which originally have been OH-groups, but in the spiral-construction of the cellulose are doing service as "watergroups"



That isolated secondary alcoholic group we shall henceforth call the "inner OH-group."

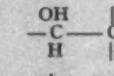
When a number of glucose units under separation of water have been linked together and our chain is formed, then we have at the spot of the connection the configuration



For the sake of building up our spiral-formula we have to suppose a commutation of the two H-atoms, in spite of how keen and unlikely this communication may appear at first.

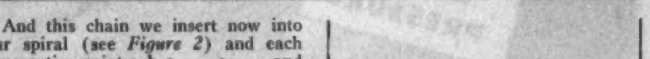
We will remember here, that we construct our spiral-formula to get a plastic view with the sole aim to develop the technic of the cellulose-work.

This supposed commutation of the two H-atoms is thus, that we get the new configuration



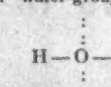
which means that we get a new secondary alcoholic group, while the following C-atom of the next glucose unit is left "naked" or "uncharged."

Therefore our cellulose-chain represents itself now thus:



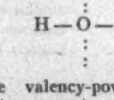
And this chain we insert now into our spiral (see *Figure 2*) and each consecutive point a, b, c, . . . a_1 . . . and so forth, is occupied by the running molecular groups of our above shown chain, as seen in *Figure 3*.

Only the "inner OH-group," keeps in the spiral its character as secondary alcoholic group, whereas all other secondary alcoholic groups connect with those sitting obliquely above them. Here we suppose this connection in the form of a "water-group"



In these "water-groups" we suppose that the O-atom in

has a certain amount of free valence-power, that in the configuration



this free valency-power is strong enough, to connect and saturate the respective C-atom as is shown in *Figure 3*.

From a_1 all following a-groups, which are "naked" C-atoms, form just as well a strutting in the cellulose-spiral, as do the water-groups with the supposed free valency-power of the O-atom. It may be mentioned, though left undecided, whether the respective winding-direction of the spiral S_1 optically can be observed, whether this perhaps only would be possible at very low polymgrades, or whether such optical recognition is extinguished by the spiral S_2 with its opposite winding-direction, growing stronger with each polym-cut.

Figure 3 now shows us, that we have in each polym-link one real secondary alcoholic group with its proper OH-reactions, four water-groups and one "naked" C-atom. The latter, the "naked" C-atom forms quite naturally a strong strutting in our spiral. When we develop figuratively the formation of the xanthate and the viscose, we shall see, that two of those "water-groups" serve as vertical struts in our spiral, while the two other "water-groups" are working in horizontal direction, securing the coherence of the micelle-connections. We therefore must distinguish between the two vertical struts and the two horizontal struts."

The forming of the xanthate and the viscose (see later) will show us how each of these groups has its exact site, and once we accept these "water-groups" we recognize, that they not only give a vertical support to our cellulose-spiral, as well as a horizontal hold between the micelles, but we may easily imagine that thereby a certain elasticity and ductility is given to the spiral-construction and ductility.

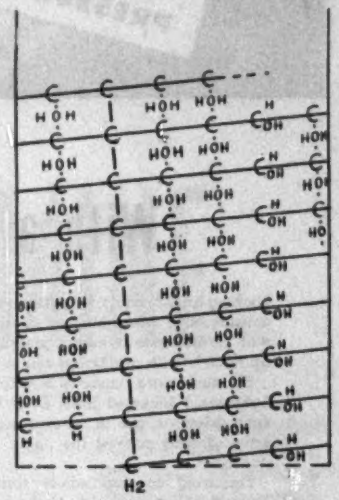


Figure 3.

Seen schematically, every polymlink represents itself as given in *Figure 4*. "a" in the *Figure 4* is the "naked" C-atom, and the connection of all a's is a strong hold of the spiral.

Another C-E Recovery Unit for Union Bag & Paper Corporation

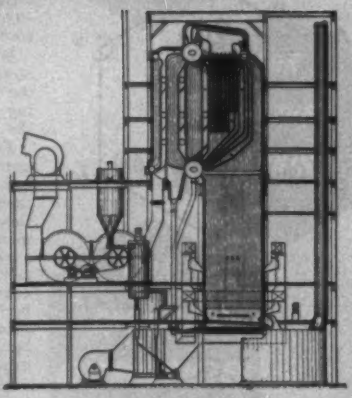
The Union Bag & Paper Corporation's mill at Savannah, Georgia, is the largest integrated pulp-to-container plant in the world.

In connection with its present expansion program, Union Bag has recently ordered another—its fourth—C-E Recovery Unit.

The new unit—like its immediate predecessor, in service since 1949—is of 350-ton capacity. It is designed to burn 1,050,000 pounds of black liquor solids per 24 hours and will produce steam at 425 psi and 725 F. Earlier C-E Recovery Units—of smaller capacity—have been in service at this mill since 1942 and 1944 respectively.

The C-E Recovery Unit's reputation for reliability, efficiency and operating economy is built on a sound basic design enhanced over the years by the addition of carefully developed, service-proved advantages. That its reputation is justified is evidenced by numerous repeat orders not alone from Union Bag & Paper Corporation but from several other prominent pulp and paper companies.

B-479



350-ton C-E Recovery Unit for Union Bag & Paper Corporation

Combustion Engineering—Superheater, Inc.

200 Madison Avenue • New York 16, N. Y.

PRODUCTS FOR THE PAPER INDUSTRY INCLUDE RECOVERY UNITS, STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO PRESSURE VESSELS

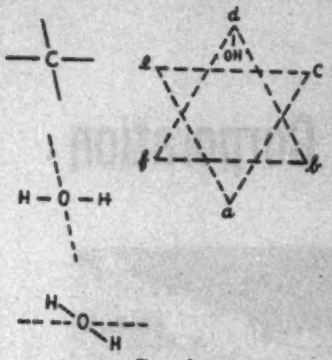


Figure 4.

"*c*" and "*e*" in *Figure 4* are the vertical struts in our spiral.

"*b*" and "*f*" in *Figure 4* are the horizontal struts, holding the connection of the micelles.

And "*d*" is the "inner OH-group" the only one of the alcoholic groups left intact and in function as such.

If we now accept these "water-groups" as really existing, if we indeed assign to the O-atom in H-O-H a small amount of a side-valency-power, then this amount cannot be large. Our expectance that such "water-groups" will not be too stable, will be confirmed in all such cases, when we attack the cellulose chemically with fresh OH-groups, and thus bring a certain "upheaval" or unrest into the cellulose-molecule. Already if we treat the cellulose only with water, we observe the effect of the OH-group in H-OH, seeing the swelling of the cellulose.

That swelling will be observed to be much stronger when the cellulose is treated with NaOH, especially under the influence of a somewhat raised temperature for some time, when thus a pseudo-sodium-alcoholate is formed, (the "ripening" of the alkali-cellulose) which very nearly has the properties of a genuine sodium-alcoholate.

Every chemical attack on the cellulose first loosens the connection between the micelles, and the thereby freed two horizontal struts thus regain their nature as alcoholic OH-groups, one after another. We may even regard the reaction of NO_3OH (nitric acid) in the same manner, when here too the OH-group brings movement and reaction, into the spiral-molecule thus forming a tri-nitrate of the cellulose. If any chemical reaction on cellulose is continued or made stronger, then more and more polym-links regain their primary alcoholic group as well as the aldehyde-group (between a and f; compare *Figure 4*). Being hydrolized, the higher polym-grades decomposes to lower polym-grades until the cellulose-molecule either entirely is destroyed or transformed back into glucose.

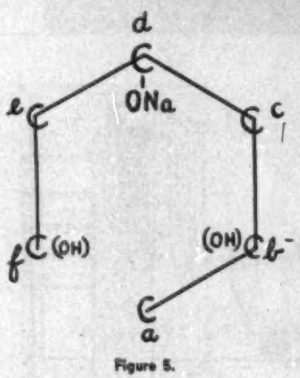


Figure 5.

With the help of *Figures 5 to 11* we now illustrate the reactions of CS_2 on the alkali-cellulose, resulting in forming the xanthate, the viscose and then the so-called ripening of the viscose.

Figure 5 represents the effect of sodium-hydroxide on cellulose after it has been kept warm and dry for some thirty hours approximately, which time is called "ripening-time of the mercerized cellulose." During that time a nearly genuine Na-alcoholate of the cellulose has been formed, and moreover the connection of the micelles has been loosened and the two "Water-groups" of the micelle-connection have been transformed into alcorolic OH-groups.

We can imagine that it by no means is absolutely necessary that each polym-link must be transformed into the Na-alcoholate to loosen the entire connection between the micelles, and thus we see that it will not be necessary that the full amount of CS_2 is used to get the viscose from the only partially formed Xanthate.

Figure 6 shows the insertion of CS_2 into one polym-link of the spiral. The two horizontal struts (water-groups) being retransformed to OH-groups (shown here in parenthesis) ready for action, while the vertical struts (water-groups) continue their function as vertical struts.

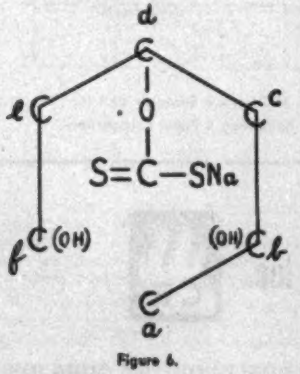


Figure 6.

In *Figure 7* the SNa-group of *Figure 6* reacts with the near reactivated OH-group, building an S-bridge and setting free NaOH.

Figure 8 shows us, how the same process repeats itself; a second S-bridge is formed, HOH is eliminated, while the ONa-group wanders to the C-atom in the middle of the polym-link. *Figure 8* then shows the real figure of the xanthate.

According to the amount of CS_2 given for that reaction, all or only a part of the polym-links have been converted into the xanthate.

Now in the course of the fabrication of the viscose, this xanthate is dissolved in NaOH plus water. These freshly added OH-groups again cause "upheaval" among the "water-groups." The spiral as well as the micells again are swelling, and slowly, during one day or two, H and OH from HOH wander into the molecule, liberating the spiral from CS_2 and NaOH.

The free cellulose is regained, which process is identical with the "ripening" of the viscose, being just an ordinary hydrolysis. *Figures 9, 10,* and *11* illustrate the process of the "ripening" of the viscose. In *Figure 9* we see the xanthate, to which water is now added. The ONa-group takes up one H from HOH and NaOH is regained, while the OH from HOH goes to the

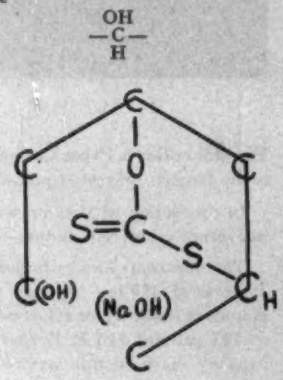


Figure 7.

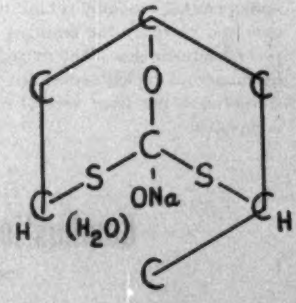


Figure 8.

SODIUM FORMATE

HEYDEN

HEYDEN SODIUM FORMATE
is a white, crystalline powder of high purity, which is useful in organic synthesis as well as in the process industries.

The importance of sodium formate as a mordant is well known to the textile and printing industry. In the chrome tanning of leather, it forms a liquor that produces a smoother leather.

Heyden Sodium Formate is shipped in 300 lb. fiber drums.

FOR WATER-RESISTANT WALLPAPERS

FOR TEXTILE DYEING

FOR LEATHER TANNING

FOR CHEMICAL INTERMEDIATES

HEYDEN FORMIC ACID (90% and 85%)

Shipped in 125 lb. carboys and 500 lb. stainless steel drums. Important as a reagent in paper treatment, leather and textiles, rubber and dyes, metal plating, laundry sours, and as an intermediate for drugs, perfumes, production of formates, etc.

Samples and technical literature mailed promptly on request.

FINE HEYDEN CHEMICALS

Benzaldehyde • Benzoates • Benzyl Chloride
Bromides • Chlorinated Aromatics • Creosotes
Formaldehyde • Formic Acid • Glycerophosphates
Guaiacols • Hexamethylenetetramine
Medicinal Colloids • Methylene Disalicylic Acid
Paraformaldehyde • Parahydroxybenzoates
Penicillin • Pentaerythritols
Propyl Gallate • Resorcinol • Salicylates
Salicylic Acid • Streptomycin

HEYDEN
CHEMICAL CORPORATION

393 SEVENTH AVENUE, NEW YORK 1, N. Y.

CHICAGO • PHILADELPHIA • SAN FRANCISCO • DETROIT • PROVIDENCE

SERVING INDUSTRY THROUGH FINER CHEMICALS

group (see *Figure 10*). We see that the first of the two S-bridges is reopened. At the same time the attack of the H and OH from HOH is going on and in *Figure 11* the second S-bridge too is loosened and CS_2 is eliminated from the molecule. But between the inserting of the CS_2 into the spiral and the following ripening process of the viscose, there is a remarkable difference as regards to the function of these water-groups of the micell connections, which water-groups temporarily got back their alcoholic OH-character. We know, that only monovalent alcohols readily give a xanthate with CS_2. The mercerization of the cellulose loosened the connection between the micells, thus making these respective water-groups ready for action as alcoholic groups. But the cellulose kept its character as a monovalent alcohol, and therefore these OH-groups have been given in parenthesis in our designs (see *Figure 5*). This is the reason, why the cellulose, reacting here as a monovalent alcohol, easily forms a xanthate under ordinary conditions, that is, without pressure or raised temperature. But at the same time this chemical attack of the CS_2 loosened the connections of the micells, mobolized the horizontal struts and thus the CS_2 could insert itself into the polym-link step by step as shown in the diagrams.

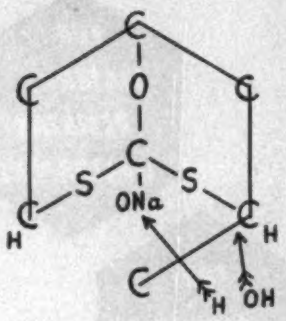


Figure 9.

When on the other hand, as we have also shown, the CS_2 is eliminated step by step under the effect of the hydrolysis, then the horizontal struts are not reestablished at once as water-groups, for the spiral as well as the micell structures are still swollen, which slackens the process of the reconstruction between the micells. During this time the cellulose has the character of a di- or tri-valent alcohol, which means, that the cellulose cannot reform a xanthate with the eliminated CS_2.

But in spite of the presence of the NaOH, with sufficient time, the reconnection of the micells takes place. It is clear that the precipitation of these regained micell groups coagulate the whole solution. The reaction between NaOH and CS_2, forming the sodium-tri-thio-carbonate supports the increasing coagulation. During the whole process, spirals which are too long, or too tender, will break into pieces, perhaps pieces consisting of groups of polym-cuts. Thus the higher polym grades will pass into lower ones; more stable, better fit for the spinning process.

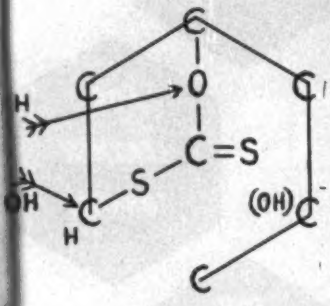


Figure 10.

So we need not resort to explanations out of colloid chemistry, but nevertheless it has been our desire to explain diagramatically the hitherto known reactions of cellulose.

It is tempting to look speculatively at the mechanism of the reaction as regards to the near relation between CS_2, SiO_2 and CO_2. We may look on these compounds as the anhydrides of the S•C•(OH)(SH) or H_2SiO_3 or H_2CO_3.

It seems possible, that a plant, without the help of NaOH, merely under natural conditions with water, warmth and sunlight, may insert a CO_2-scaffold into the polym-link for harder wood, to give more strength or that an SiO_2-scaffold is inserted for defense against animals, who will not eat sharp edged leaves or branches.

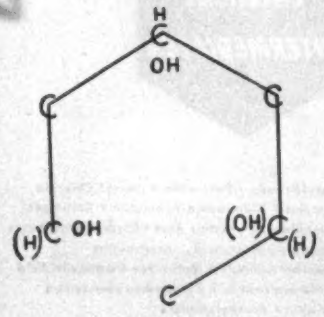


Figure 11.

We recognize how difficult such a cellulose-spiral must be in its growth and how rough our methods of unlocking cellulose material have been.

BARK BEETLE OUTBREAKS

Bark beetles killed over 25 million board feet of valuable pine timber in east Texas in 1950, the U. S. Department of Agriculture's Bureau of Entomology and Plant Quarantine has reported. The area involved was only about 200 square miles. Other outbreaks occurred in other southern areas, but on a more limited scale.

These outbreaks apparently are continuing into 1951, the Bureau said.

Three kinds of beetles are responsible for this destruction, according to Dr. James A. Beal, head of the Bureau's Division of Forest Insect Investigations. The worst of the three, he said, is the southern pine beetle. It has caused most of the damage, so far, but the black turpentine beetle and engraver beetles are also involved in the outbreaks. The black turpentine beetle ordinarily is a pest of only minor importance, but has caused considerable damage over the past 2 or 3 years.

These beetles can be controlled without great difficulty. Infestations can be killed out by removing infested trees during fall and winter. The beetle crop for the next year is under the bark of infested trees at that time.

Large pitch masses at the base of pine trees indicate attack by the turpentine beetle. Such infested trees should be removed and salvaged before the tops are completely brown. Valuable shade or turpentine trees can be saved by spraying infested portions of the trunk with benzene hexachloride or chlordane. The treatment usually prevents future infestation until the tree recovers.

Trees infested with the southern pine beetle, and engraver beetle, should be removed. Dead trees having bark peppered with "shot holes" can be ignored because the holes indicate the beetles already have gone.

It is easier and cheaper to control these beetles in early stages of outbreaks. Wholesale killing of trees will follow unless steps are taken to control the pests prior to "outbreak" stages.

An effort is being made to detect and record the presence, and abundance, of these destructive pests, by Federal, State, and public land-managing agencies. This cooperative effort is possible because of the recently enacted Forest Pest Control Act, passed by the 80th Congress. Only by these efforts can outbreaks of serious pests be prevented, or controlled in time to save timber sources.

The public can assist in this work, Dr. Beal said, by reporting the presence of any of these three insect pests working in southern pine trees to the Division of Forest Insect Investigations, 223 Federal Building, Asheville, North Carolina, or P. O. Box 151, Gulfport, Miss.

A Low Cost Method of Improving Machine Operation

Downingtown Suction Slice installed in conjunction with a Downingtown Suction-Extractor.

An inexpensive and thoroughly reliable method of faster water removal back of the nip can be accomplished by installing Downingtown Suction Slices. A Downingtown Suction Slice used with cylinder moulds, extractor, suction extractor, plain and suction press rolls minimizes crushing and flowering . . . prevents water from accumulating behind the nip and working back through the felt.

Downingtown Suction Slices are made of welded stainless steel for structural strength, light weight and corrosion resistance. Each slice is designed and manufactured for the individual paper or board machine on which it is to be used.

Let a Downingtown Engineer show how the installation of suction slices can improve machine production and improve the quality of your products.

DOWNINGTOWN MANUFACTURING CO., DOWNINGTOWN, PA.

Pacific Coast Representative: John V. Roslund, Pacific Bldg., Portland 4, Oregon.

DOWNINGTOWN

SUCTION SLICE

Modern Method of Water Removal

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

How are Your Forests Doing?*

Vernon E. Johnson[1]

I am very glad of the opportunity to discuss Canada's forests because most of them are Crown lands and belong to you and me and all of us as citizens of Canada.

In case you don't know it, you and I have a share in 450 million production acres of forests which comes to something like 30 acres apiece.

I have been told that a recent public opinion poll in the United States indicated that 5 percent of the people didn't know who was President. If that's the case, I'm sure a great many more than 5 percent of the people in this country don't know very much about the wonderful forests they own and what is being done to make them last forever. And I think those of us who have some responsibility for the sound development of our forests should get about more and tell the story.

People who think about our forests are sometimes afraid that some day we will run out of wood. I'm glad they do feel that way about it. So long as we are thinking about our forest inheritance we will be all right. But let me begin by saying that Canadian International Paper Company and its subsidiary New Brunswick International Paper Company are today growing as much wood as they cut. The 13 million acres of your land which we lease from the provincial governments of Quebec and New Brunswick are operated on a sustained yield basis.

If anybody has good reason to be a good citizen in the forests it is the modern pulp and paper company. It may have been possible 50 or even 25 years ago for a paper company to pay very little attention to the future of the forests, but any such company which today didn't think in terms of growing trees like a crop would be crazy — and also a very poor investment.

There was a time when a forest products company — especially a small one — could go into a forest, consume the wood and then move on to some other area. That has happened here. It also happened in the United States. That is one of the reasons newsprint manufacturing came to Canada. But no big company like ours with five mills valued at a quarter of a billion dollars is under the delusion that it can pick up its mills some day and move to another part of the forest. We expect to stay put and we intend to manage the lands under our care in such a way that the wood will be coming down the rivers of Canada when your grandchildren's grandchildren have grandchildren.

I want to talk first very briefly about forest management *as it is practiced today* — and then tell you something about *what it's going to be like.*

You can't do tree farming the way you cultivate a garden but there are a great many similarities. Of course, you have to think in much longer terms. Under the law in Quebec you may cut a poplar at 40 years but the softwoods which are the best for paper making must be 61 or over. That would be a long time to wait for spring onions. The answer is that we keep moving around so that while new trees are coming up in some sections we are harvesting another area. That's why we need plenty of acreage.

I'm sure a great many people think that the Woodslands Division of a paper company like ours (if they know we have a Woodlands Division) cuts the wood nearest the mill this year and next year goes out and cuts some more and just keeps on cutting.

Well, let me tell you how we really do proceed:

First, we do have a Woodlands Division. It is made up of 62 trained foresters — men who have been graduated from places like Laval University, University of New Brunswick and University of Toronto. Our company is, among other things, a big forestry organization.

Second, in every area where we operate we have a ten-year plan. It is a plan which a lot of trained men took a long time to prepare. It has been submitted to the foresters of the province. They have studied it and checked it. Probably some of them were with us in the field when we were doing the work on it. A plan of that kind may cost us more than half a million dollars. Any cutting we do will be developed out of that ten-year plan.

Third, the cutting plan of each year will have been drawn up and submitted to provincial authorities after further, more recent fact collecting. Here in Quebec we must do this at least three months before the harvesting begins.

Working out one of these cutting plans is quite a program. Where good maps are available, we begin with them. Where there are no maps we make maps. Today we use planes for survey work—taking hundreds of pictures from the air and matching them up to the maps. With the help of a stereopticon viewer a trained man can look at aerial photos and practically tell you how high the hills are, what kinds of trees you will find, and how many cords to the acre.

Working from the air is the easy part. Down on the ground timber cruisers are at work — usually in the winter when travel is easier and the flies don't bother them. Working in pairs the timber cruisers go through a forest on a straight line traveling by compass. On each side of the straight line for a distance of 33 feet, or half a chain, they will count every tree, measure its size with callipers, note its kind, and indicate its condition. They also make notes of wild life seen or signs of wild life. One man checks the trees and the other takes notes. With a level they will estimate the height of the trees. For a distance of five chains they will do this and then skip five chains and do it again for miles and miles. They will travel parallel lines 15 chains or about 1000 feet apart.

Taking a forest inventory is quite a job. In the Gatineau limits which we manage we estimate that there are 2½ billion trees — more or less.

We don't make any cutting plans until we have done a thorough job of this kind. When we do go to work on the harvesting we know what we are doing.

What we take into account is just what you would take into account if you were doing it. For example, we think about water tables and flood control. Trees and the forests are like dams, they hold back water. The snow melts slowly in the forests — otherwise all of us who live near rivers would be washed away in the spring. We do our harvesting in such well distributed way that we don't do damage to our forests through floods.

When we talk about growing trees people ask whether we mean that we set out trees the way you would an asparagus bed — by hand. Sometimes we do. In one burned area we recently set out about 25,000 seedlings. The little trees are coming along fine. If we left the job to Nature she would plant the same area, but it would take her ten or fifteen years longer to do it and we couldn't be sure she would plant the trees we want.

But planting by hand in the Canadian woods is very difficult. The country is rough. We can't do a job that

---

* Presented at the Annual Meeting of the Industrial Relations Section of the Canadian Pulp & Paper Assn., Mount Royal Hotel, Montreal.

[1] Vice-President and General Manager, Canadian International Paper Co.

THE BAGLEY & SEWALL CUTTER

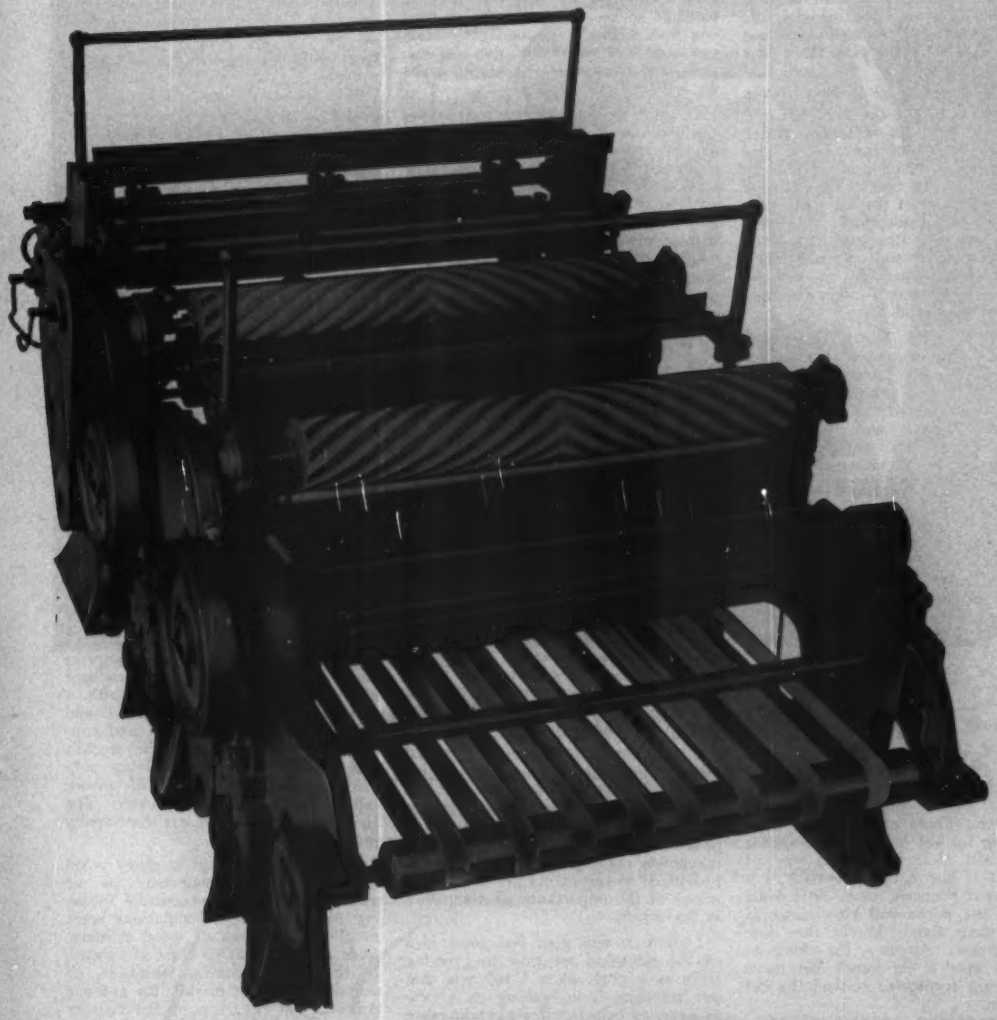
If you want clean, accurate cutting, this is the cutter for you. It's definitely new in design. Has positive drive on knives and draw rolls — no belts — assuring accurate sheet lengths. And the knives are easily adjusted — no shims.

All clutches are air operated from the front side of the machine.

This cutter has a quick change dual slitter that makes easy changing from one set of slitters to another, without breaking the sheet.

The Bagley and Sewall Cutter is rigidly constructed with heavy box section frame for smooth operation. It will do a clean job of cutting with a minimum of attention. You can get this cutter in Simplex, Duplex, or Triplex designs.

Write us for more detailed information.



BAGLEY & SEWALL

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY

WATERTOWN, NEW YORK

NEW YORK OFFICE: 500 Fifth Avenue, New York, N. Y.

Finland Representative
Aktiebolaget Ekstrums Maskinaffar
Helsingfors, Finland

Foreign Representative
Castle and Overton, Inc.
630 Fifth Ave., Rockefeller Center, New York, N. Y.

big anywhere near as well as Nature can do it. Nature will put down five or ten thousand seedlings to the acre and think nothing of it. (About fifteen hundred of her seedlings will grow to maturity.) Our best method is to work with Nature—giving her a hand. We cut in such a way that regeneration is prompt and thorough. We estimate that Nature lays down 100,000,000 little trees on the lands in our care each Spring—and that's something we couldn't do in a century of springtimes.

The good forest manager looks at a forest as a kind of cellulose factory. What he wants is wood production. The question is: How much cellulose per acre can we grow year after year after year?

One thing you have to do to get a good yield is to use the axe. Go into any forest with an increment borer some time—so you can take a core out of a tree and see how old it is by its annual growth rings. Take a look at the production of the big trees—by looking at the outside rings. When the trees get old they stop growing. They stop producing wood. Furthermore, they become vulnerable to disease. They need to come out—otherwise they will blow down and rot.

The New York State Adirondack Forest is a good example of what not to do. The heavy blow of last November laid low thousands of old growth trees and because of the State laws these trees,* and the mature standing ones, are not permitted to be cut. This is forest management and conservation defeated by unwise legislation.

Cutting is necessary for the health of a forest. There are plenty of large forest areas where the ground is a tangle of trunks and many of the standing trees have been damaged as the others fell. That's a poorly managed forest. The little trees may have been hurt and the disease which can attack the old trees may infect the youngsters. When a tree is mature Nature has done her job and we should help her make room for the next crop.

When people go into the woods and see a clear-cut area they are often shocked. Maybe you have had this experience. There are different ways of cutting for the best interests of the forests and clear cutting is one of them. It is not a bad way—it is a good way if properly done. Soft wood trees in the north will blow down if left standing alone. Maybe they just get lonesome. Anyway, the thing to do is to take a big bunch but leave neighboring forests to re-seed the cut over area.

What you don't realize is that you may have been traveling all the time through a forest area that was clear cut years ago and now is a fine healthy woodland. You see the bare spots but you aren't conscious of the new forests. Any forest manager can take you to such new forests today—forests that are better than the old forests.

The forest manager knows what helps Nature and what makes the trees grow—depending on what kinds of trees they are. He can take you to forests where there is a fine understory of spruce coming up in the shadow of mature jack pine. By harvesting the jack pine he gives the more valuable spruce a chance. And where you find a good well-managed forest you will find something else—game. Deer and moose abound in the areas we harvest.

If there is one thing I want especially to emphasize to you, it is that modern forest management is not only producing forests it is producing new and better jobs in the forests. The modern woodsman has to know more than the old style lumber jack—and that means he's worth more. He lives better, eats better and sometimes commutes to the job in a bus instead of staying in the woods for months at a time. Forest management is a fine career for Canadians who like to live in the open. It is a job calling for skill, experience and education. The cutters need to be better trained—and we spend a lot of time on training them. The modern woods contractor is an expert — increasingly trained under experienced foresters to harvest with an eye on the next crop. As we expand the use of machinery in the woods we also make better jobs for people. As we use more and more species of wood to manufacture paper and other forest products we need better educated woodsmen. As we learn more about forest management we need more forest managers. The young farmers in the forest areas will have better jobs in the woods than their fathers had—better and more interesting. Forest operations are opening up new opportunities for men who like an outdoor life.

I don't want to make any special plea for manpower in a time of emergency, but I do want to recall that our forests can be damaged if they go for any long period without the right kind of attention—due, for example, to a manpower shortage. I feel certain the provincial governments are fully conscious of the importance of manpower in the woods.

I think it will give you some idea of the attention we give to growing trees as a crop when I tell you that our company is embarking on a new program to help farmers to make more money out of their own wood. I don't know whether you realize it or not but the value of their own wood to Quebec farmers last year—counting wood they sold and wood they used themselves—was approximately $58,000,000. About 20 percent of the wood our industry uses is bought from farmers.

What we are doing is to buy some abandoned farms and use them as demonstration centers. There are a great many farms in the forest areas of Canada which can't support themselves because they have tried to take forest soil and make it over into farm land. Numberless settlers have found out to their sorrow you can't do that. Certain types of soil are fine for trees and no good for any other crop.

Maybe if we can help farmers to see the value of tree farms we can also help stop the annual devastation caused by settlers' fires—many of them started for the purpose of clearing forest land to adapt it to some other purpose.

On these experimental farms we are giving Nature a hand. We are letting the forest soil go back to forest. We are keeping cattle away from the seedlings. We are cleaning out the weed trees and scrub which is worthless so that the good trees can come up. It is much easier, by the way, to cultivate a tree crop than any other kind of crop.

What we want is more farmers who understand tree farming and who are forest-minded. When a man has a good and profitable woodlot and is managing it so that he can draw an income from it every year, we have a fellow citizen who thinks the way we do about forests and can understand our point of view.

If you were to ask me how your forests are doing today, I would say they are doing all right.

But let's talk about tomorrow. Let's look into the future.

Our long range objective must be to increase the productivity of the forest acres we lease. More and more products are being made today from wood cellulose. Canadian International Paper Company is one of the world's largest manufacturers of newsprint but we are also the largest producer of wallboard in the Commonwealth, a very large producer of plywood, and we manufacture paper bags and containers. We are among the world's biggest producers of dissolving pulp used in the manufacture of rayon, cellophane and various plastics. The good uses of cellulose are continually growing.

It was not such a great many years ago that forest management, as we understand it today, practically speaking did not exist. Populations were small and the uses of wood cellulose were not so great as they are today. In the United States, which is, of course, our largest market, the average American at the turn of the century consumed a little more than 54 pounds of paper per year. Last year, he consumed approximately 375 pounds.

What about the future, then? Can we have more wood for more uses? Can we produce still more jobs for

* A law was recently passed by the New York State Legislature allowing the trees blown down by the November hurricane to be salvaged and used for lumber, pulpwood, etc.

Let Naugatuck Give Your Products A Lift

We've done it for hundreds of products. If your product can use coatings, dippings, bondings, saturatings, it can benefit in many ways from the wonders that can be worked by Naugatuck's Latices, Lotols® and Dispersites®. If you are looking for new product ideas, get in touch with Naugatuck.

Naugatuck Chemical Division of UNITED STATES RUBBER COMPANY
NAUGATUCK, CONNECTICUT

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • New York • Philadelphia

Rubber Chemicals • Aromatics • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices

Canadians, more and bigger payrolls, still more foreign exchange for Canada?

I said in a recent speech that we are entering a new era of forest management in this country and perhaps throughout the world. It will be a period during which we do a much better job than we have ever done in the past, though we are doing a good job now. It will be a period during which we will be increasing substantially the output of our forests — perhaps doubling our wood production per forest acre. Great achievements are possible and, in my judgment, they are bound to come. We are already moving down the road and it is only a question of how fast we travel.

I don't expect to give you a short course in forest management. It takes some of our best universities 5 years to do that. But I would like to draw your attention to some of the important considerations which should be in your minds — in the minds of all who make their living in the mills of pulp and paper companies — and in the minds of all Canadians, owners of the Crown lands of Canada — as we move ahead. Some of the considerations may surprise you. Let me discuss them very briefly:

1. The Importance of Roads

One of the first and most important needs of forest managers today is *roads*. You may think that what we need is flit-guns to kill the budworms and plenty of DDT, but if you stop to think of it, you will realize the vital necessity of an increasingly elaborate road system through our forests.

The rivers of Canada are the principal highways down which we bring the wood — and the ice roads of the winter serve our purposes at that time of year. But without dirt roads, which let us get into the forests for a great variety of purposes, we cannot do the forest management job of the future.

As you know, fire is one of the greatest disturbers of forest growth — and it never pays a nickel for what it takes. It consumes cut-over areas, burns up young growth as well as killing trees in old forest. But a great many fires could be controlled or stopped if we had quick access to them by road. It is often impossible to reach a fire until it has spread beyond control. When you consider that on the average fires burn over one and a quarter million acres of forest land in Canada each year, you will see readily enough what the contribution of roads might be.

Another great consumer of our forests is insects. Here again, roads can perform a tremendous service to the forest manager. Very often an infected area cannot be reached. If we could get at it early enough to cut the trees out from under the bugs and make use of these trees, it would serve a two-fold purpose—less loss of wood and a better fight against the bugs.

The best available figures indicate that insects on the average chew up two to three times as much wood as fire destroys. This is not reducible to acres like fire coverage but probably reduces the usable forest area by at least as much (1,000,000 ac.). Together they shrink the field for cutting as much or more than the cutting itself. When you consider this and let it sink in, you will recognize the possibilities of good roads and the contribution they can make to the management of Canada's forests.

Roads are what makes it possible for us to make increasing good use of hardwoods—because the hardwoods have to be trucked out. They can't be floated down the rivers since they sink.

The company I work for has built, and maintains, 2600 miles of road. Road building and maintenance is one of our big jobs. Forest roads today are built entirely by the woods companies — though they are available for public service.

In order to do the forest management job of the future, I think we will eventually need something like one mile of forest road for every four square miles of forest. That's a lot of road. It would cost about $25 million to build such roads on the lands leased by our companies at present costs.

2. The Possibilities of Silviculture

If we had the roads we could more readily do jobs which will increasingly have our attention in the years ahead. Silviculture will one day very materially increase the production of our forest acres. In my judgment, an increase in output of 100 percent or 200 percent will not be impossible under favorable conditions. To show you what Nature can do at her best I can take you to a great many forest areas where thousands of acres are growing at least half a cord a year. These acres have standing timber of 30 to 40 cords and the trees are 70 or 80 years old, but this is exceptional — the average for softwood is less than 10 cords per acre. They must have been producing at least half a cord a year. But undoubtedly they produced a great deal more wood that isn't standing there today — that fell down or was destroyed in one way or another by Nature. It is important to remember that Nature is a great producer but also a great destroyer. If we can one day produce only a half a cord a year on all our forest acres, we will increase the output of our forests very substantially — and I think a half cord isn't much.

Just to give you some idea of how big a project silviculture can be, let me remind you that if we devoted one man-day — and that isn't very much either — to each forest acre leased by our companies, it would cost us something like $100 million — and it would take a lot more men than are now available for such work.

Roads and silviculture are the first two items to be considered as we look toward the forest management of the future. Maybe I should have mentioned the third one first, but I wanted to get some figures in your mind before I did so.

3. We Must Face Our Cost Realistically

As long as there were large tracts of virgin timber for people to go to, forest management could not develop. As a nation we were drawing on capital — and we built a great country as one result — but we scarcely realized that we were consuming capital. Our cost accounting was not very good, but that time has passed.

If we want plenty of wood 25 and 50 years from now — enough to support a larger and expanding free press, for example — we have got to move continually in the direction of fully managed forests and that means all forest products companies — small or large — have got to face realistically the true cost of producing wood, and increasingly provide for it in their cost calculations. If we don't do that, our industry and its customers may very well reach a point where expanding demand cannot be met by expanding the supply. The forests won't be producing big enough crops. In figuring our costs we must include enough not only to meet the demands of modern forest management but also to encourage the better forest management of the future. This is the only sound long-term policy from the viewpoint of the consumer of pulp and paper products and of the general public.

I think this is in part an educational job for those who sell forest products. They must more and more talk forestry and forest management to their customers, because both buyer and seller have an interest in an eternal wood supply.

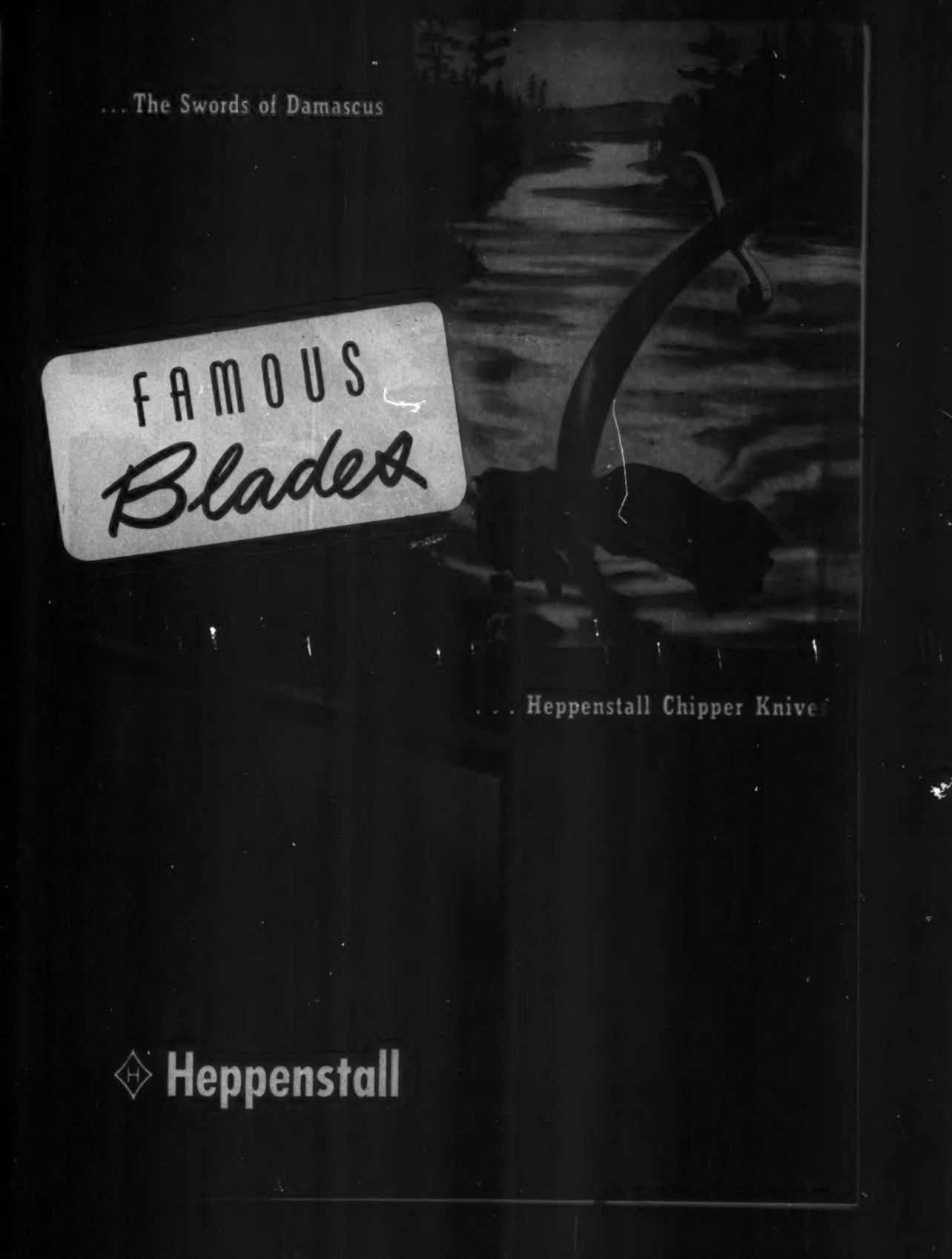
One more **final point:**

4. Selective Growing

There are certain areas and certain soils which are better for some trees than for others. For the most part you will see this as you look at the forests. Certain kinds of trees will be in the majority and will be prospering. Nature knows her business. But Nature also gives everybody some kind of a chance so that there will be a lot of competition for the soil — and some kinds of trees will not do well at all. They'll hardly make ends meet. It's a little bit like settlers trying to establish crop farms on land which can do a much better job growing trees.

If by forest management we can give a hand to the trees that grow best in a particular soil or area we can get much better production from each forest acre. Our forest factory will have a better output. Call this selective growing, if you like.

We are already moving in this di-


. . . The Swords of Damascus
FAMOUS
Blades
. . . Heppenstall Chipper Knive
Heppenstall

rection and the reason is that our research and manufacturing people are finding ways to use a greater variety of wood fibers for their manufacturing. This is a most significant development that many people are not conscious of. It opens up great possibilities for better forest management—and it is already meaning more money in the pockets of farmers and others. It seems to me certain that the forest management of the future will involve a great amount of selective growing—and like *silviculture* and *road building* it involves costs and therefore depends upon a realistic appraisal of our costs to allow for good forest management today and better forest management tomorrow.

Maybe I've told you more than you want to know about your forests. That's a risk you take any time you ask a forestry man to discuss trees. But I hope I can give you some of our enthusiasm for the good work that is being done today, and the better work which is going to be done tomorrow, so that you will want to take your fellow Canadians by the lapel of their coats and say:

"Let me tell you about our forests—yours and mine."

Ruberoids Newest Roofing Felt Mill

J. V. Edge[1]

The new felt mill of The Ruberoid Co. located at Mobile, Ala., has now been operating most successfully for nearly a year. It was conceived back in 1948 when it became obvious that roofing felt manufacture was needed to complement the existing mill in Mobile which made asbestos shingles and which saturated and manufactured asphalted felt base shingles.

They had a tract of land to start with. This tract had a railroad siding and was adjacent to the asphalting department. These factors were attributes but all others were drawbacks, such as the fact that it was located in a residential district. The city was necessarily strict in its limitations on the use of city water and city sewerage system, and a felt mill is one place where lots of water is needed.

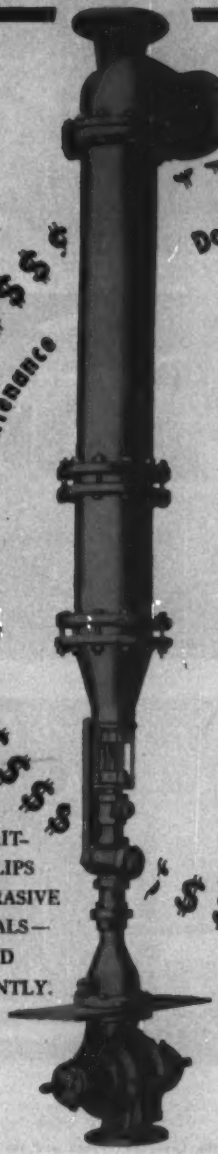
The Ruberoid engineering staff at Bound Brook, N. J., collaborated with the local engineers and management in Mobile to overcome these difficulties and to get a really grade "A" mill operating in the shortest possible time. These able engineers went "all out" to design convenience into this new project, and also in making the flow of materials economical and practical.

Logs, old papers, and rags are brought in and stored at one end of an 82 foot span, rigid steel truss construction building, 220 feet long, which houses at one end, the stock preparation equipment, and at the other end, the new Downingtown paper machine. The dry end of the paper machine is elevated so that the floor is level with the floor of the adjacent saturating department. The paper machine winder, being only 50 feet from the unwind stands of the saturating machine, and being on the same level, it is easy to roll the rolls of felt from one machine to the other. This requires a minimum of storage space and a minimum of handling.

The operation of a chipper, to chip Alabama long leaf pine logs, was a puzzler, as anyone who has ever heard a chipper in operation can well imagine, especially in the middle of a residential district. This didn't stop the Ruberoid staff. They designed a soundproof building to house the chipper and to protect the slumbers of the neighborhood. The rag cutting room is another source of noise, so this was put in another separate soundproof building, with conveyors to bring the cut rags to the stock preparation room. The finest of dust collection equipment was installed in the rag cutting room. Both the chip and the rag systems have sufficient capacity to permit, under most circumstances, one shift operation. The chipper and its soundproof building were set up, as everything else in Mobile, on pilings across the railroad siding from the location of the mill. Chips are brought across the tracts by a conveyor and stored in bins above two chemi-pulper systems.

[1] Downingtown Mfg. Co., Downingtown, Pa.

VORTRAPS



A Dollar Saved Is A Dollar Earned.....

A Maintenance

SAND-GRIT-
GLASS-CLIPS
AND ABRASIVE
MATERIALS—
REMOVED
EFFICIENTLY.

VORTRAP USERS REPORT—

- FASTER MACHINE SPEEDS.
- FEWER BREAKS.
- INCREASED SCREEN PLATE LIFE.
- INCREASED JORDAN FILLING LIFE.
- INCREASED WIRE LIFE.
- CLEANER FINISHED PRODUCT.

ARE THESE ECONOMIES OF INTEREST TO YOU?

SEE ONE OF THE MANY VORTRAP
INSTALLATIONS FOR POSITIVE PROOF

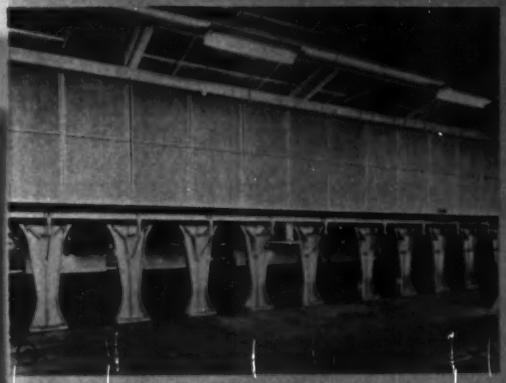
THERE IS EXPERIENCE BEHIND VORTRAPS

WRITE FOR BULLETIN NO. 219-C

NICHOLS ENGINEERING & RESEARCH CORPORATION

70 PINE ST., NEW YORK 5, N. Y.

40 S. Los Robles Ave., Pasadena, Calif. • 1477 Sherbrooke St. West, Montreal 25, Canada



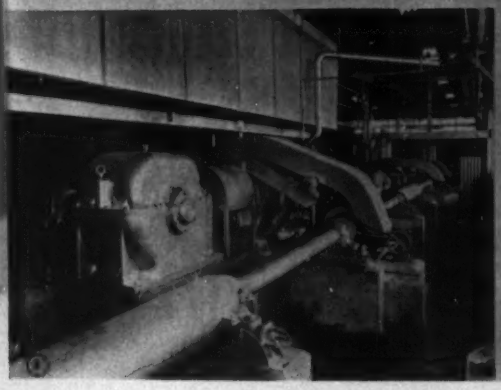
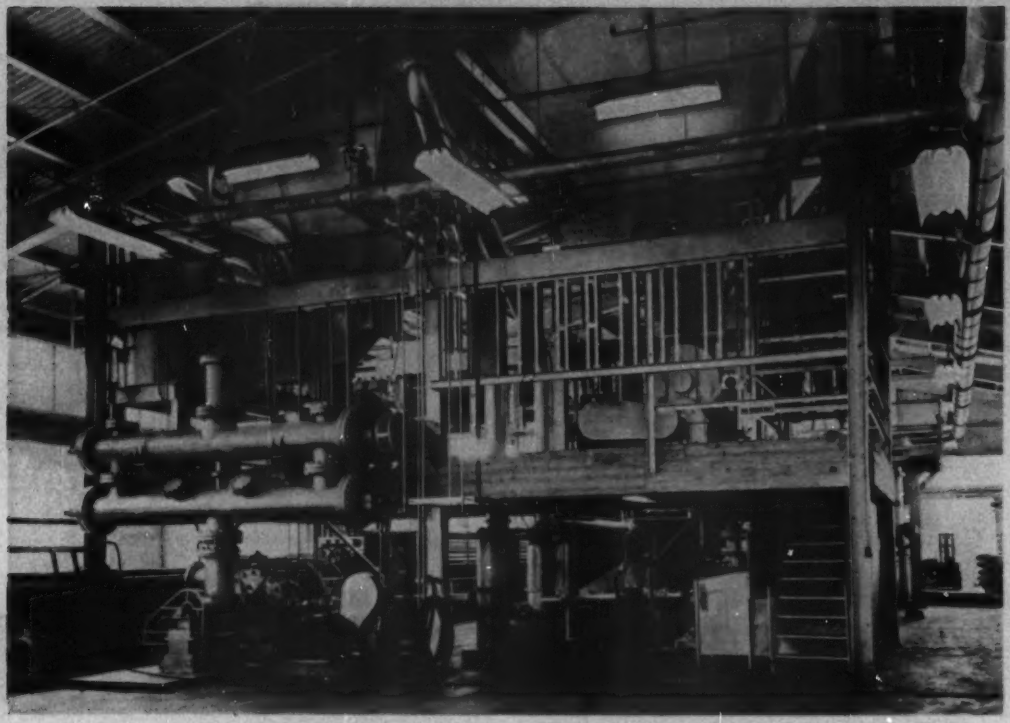


Figure 1—The new Downingtown felt machine shown from the wet end. In the foreground is the Crossflow mixbox and the Conflow vat. Figure 2—The Press Section showing two plain presses and the stands for the future addition of a suction primary press. Figure 3—The 2-deck dryer section showing clearance between dryer and machine room floor. Dryer hood is by Ross Engineering Co. Figure 4—Calender. 2-drum upright reel with winder in background. Figure 5—View of line shaft and sectional drives. Note Allis-Chalmers vari-pitch sheaves. Figure 6—Winder capable of making rolls 72" in diameter weighing as much as 6800 lbs. Unloading table in foreground.



Dual Asplund Defibrator installed under large chip bins. Each defibrator is equipped with 2 reaction chambers.

The two chemi-pulpers can produce approximately 25 tons/unit of high yield pulp for felt. These units operate in the 150 p.s.i. range on a four minute cooking cycle using approximately 2½ percent to 3 percent NaOH on the o.d. wood basis.

These units are equipped with Type "C" Defibrators and all the material in the unit in contact with the stock is made from either solid or clad stainless steel with the exception of the Defibrator segments.

After careful consideration by The Ruberoid Co. management, the chemi-pulpers were chosen to produce the pulp required by the new felt mill operation at Mobile, Ala. Several other Ruberoid plants also use these machines to produce pulp for both roofing and flooring felts.

Since the City of Mobile would allow only 35 gallons per minute of fresh water to be used, only 25 gallons per minute of waste water to be discarded into its sewer, an almost watertight system had to be devised, with large water and white water chests, save-alls, filters, etc., so that not a quart of water was wasted unnecessarily.

Refining equipment and jordans are located in the basement. This is done for the primary purpose of restricting noise, also for space conservation.

The three stocks, asplund wood fibre, rag stock, and old paper stock, are each prepared separately, refined and run into ample individual cement chests located in the basement. These stocks are then proportioned and run through a final jordan and onto a flat screen. From here the stock goes to a Crossflo mixbox ahead of the forming vat, where it is further diluted by recirculated white water and on by gravity to the approach flow hoppers under the single, high capacity vat.

The engineering staffs of the Downingtown Manufacturing Co. and The Ruberoid Co. collaborated in designing the vat. It has cast iron ends, with a copper covered cypress body. The combination of operating and technical approaches used in the design of this vat is largely responsible for the excellent results obtained from the new machine.

The press section on this three-width machine embodies two plain presses. Stands for a suction primary press were incorporated for use when the demand for felt warranted its installation. Those stands now hold two pipe type suction boxes, which work on the sheet and the felt before the first press.

The second press is reversed with felt framing to accommodate a second press felt of the same length as the first press felt. The first felt is conditioned with a suction felt cleaning roll, while the second press felt uses a Vickery conditioner.

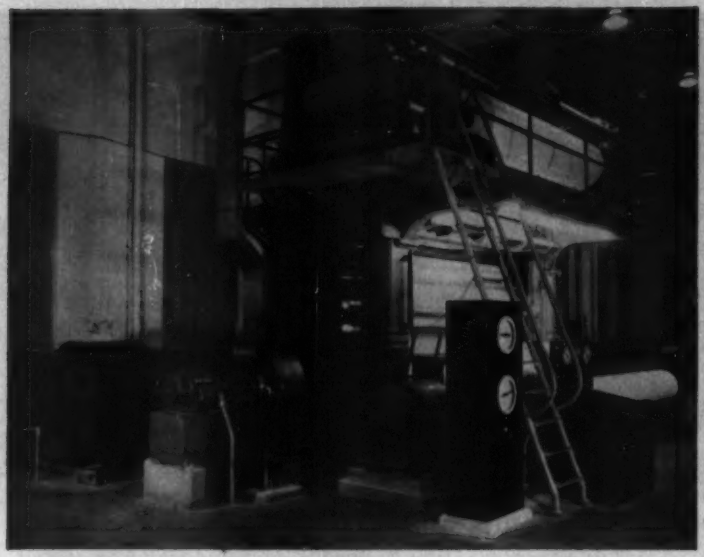
The dryer section contains 42 4'-0" diameter dryers in two decks. The dryers are arranged so that there is a clearance of 5'-0" under the bottom dryer to the machine room floor. This helps immeasurably in handling broke. The dryer section has a Ross hood and a Midwest-Fulton dryer drainage system for the 75 lbs. per square inch operating pressure of the dryers.

The calender and finishing equipment is installed on the elevated level which is the same level as the saturating equipment. There is one calender stack, one two-drum upright reel, and one Downingtown two-drum winder, capable of winding straight hard rolls up to 72" in diameter.

The machine is driven by a steam turbine, directly connected to a lineshaft on the machine room floor. The lineshaft drives through vari-pitch V-belt sheaves to spiral bevel gear units. This drive is unique for its accurate draw control.

The mill was designed for 50 tons per 24 hours. Within a month after the startup, the average production was 52 tons per day. This average production figure climbed steadily month

(Continued on page 46)



FASTER SUPER-CALENDERING!

G-E supercalender drives keep your supercalender ahead of your paper machine by providing faster, smoother acceleration and deceleration to increase your daily output and minimize paper breaks. Uniform threading speeds reduce setting-up time to a minimum. Quick emergency stopping minimizes costly damage to calender rolls. Centralized control simplifies supercalender operation. In this Maine paper mill, the supercalender, unwind and windup units are all electrically driven, automatically holding desired sheet tension.

Get the finished

FASTER CONVERTING!

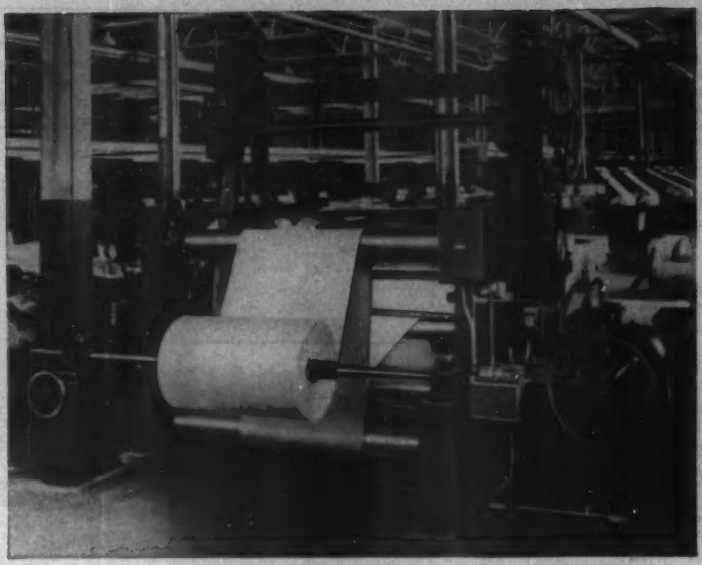
Keeping speeds in step for an entire converting machine from one control point, G-E packaged Speed Variator drives assure faster acceleration, fewer breaks, less waste and time lost. The Speed Variator unit, with motor-generator and a-c and d-c control in a compact package, cuts installation cost, makes future converting-room rearrangement easier and less costly. The G-E co-ordinated drive for this 78-inch double-deck corrugating machine uses centrally-controlled individual d-c motors to drive corrugating rolls, adhesive rolls, straw board feeder, adhesive glue roll, and double-facer roll.

GENERAL ELECTRIC

653-8

FASTER REWINDING!

Complete, accurate control of sheet speed and tension—for more rolls per day—is provided by G-E rewinder drives. Threading, running speeds and stopping are faster, and every roll is wound to the hardness you want. Soft starts reduce paper breaks. In addition, in this slitting-rewinding operation, G-E side-register control maintains accurate register continuously, automatically—reducing trim waste, increasing production. Spoilage in other finishing-room operations is also reduced by G-E cut-off and color register controls.



paper—faster!

General Electric drives for paper finishing and converting—individually engineered to your needs—can help you step up production—meet customer specifications more economically!

FASTER BAG-MAKING!
Driving a bag-printing machine, this 5-hp G-E Type ACA induction motor is only one of many G-E single-motor adjustable-speed drives that help speed up operations on cutters, conveyors, packaging machines, etc.

In papermaking, every step is important, but the pay-off is in the finishing room! And that's where—to help you maintain top customer satisfaction—General Electric offers you the broadest range of dependable electric equipment to meet your every finishing-room need. Engineered to your individual requirements by experienced industry specialists, it's also backed by quick, on-call service from any of 30 service shops to keep your output uninterrupted. With this G-E team helping you, you boost finishing-room output—meet your customers' quality specifications in less time and at lower cost. Find out from your G-E representative—soon! *General Electric Company, Schenectady 5, N. Y.*

CO-ORDINATED DRIVES
for Paper Finishing and Converting

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Most orders accepted, however, at price prevailing on date of shipment. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Port▪

Rolls, contract, per ton	$105.00/110.00
Sheets	110.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.

Standard Wrapping Rolls	$7.75/ —
No. 1 Wrapping Rolls	8.25/ 8.50
Standard Bag	7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$1.95 /$2.25
Wh. No. 1 MG	1.95 / 2.25
Wh. No. 1½	1.85 / 2.15
Wh. No. 2	1.85 / 2.15
Kraft Non-Tar	1.85 / 2.15
White Non-Tar	1.95 / —

Toilet—per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.60/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.85/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x5, 2-ply	$8.95/10.65

Paper Towels—per case of 3750

Wh. Jr. M'tif'd 9½x9½	$5.75
Br. Sr. M'tif'd 9½x12	6.10
Br. Jr. M'tif'd 9½x9½	3.60
Br. Jr. Sgl. fold 9¼x10½	3.65
Bichd. 7½x11, 24/25 rolls	$7.00/7.55

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets*	$19.55/21.55
Reg. Jute M.F. 40-lb., sheets*	18.00/20.00
Wrapping Manila	8.75/10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Second Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$85.00/100.00	$95.00/100.00			
Sulphate, Bleached	135.00/175.00	190.00/200.00	*$255.00/315.00		
Sulphate, Unbl. Northn.		145.00/173.00	*225.00/295.00	†290.00/ —	
Sulphate, Unbl. Southn.					*225.00/ —
Sulphite, Bichd. (Sftwd.)	135.00/143.00	160.00/175.00	*250.00/290.00	*225.00/ —	
Sulfite, Bichd. (Hdwd.)	135.00/ —				
Sulphite, Unbichd.		150.00/160.00	*225.00/265.00	*200.00/ —	
Sulphite, Unbl'd (Glassine)		164.00/ —	*227.00/ —		
Soda, Bichd.	140.00/142.50	135.00/160.00			
Siderums, Pulping News	106.00/ —	106.00/ —			

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$7.20 / —
60-lb. 600 ft. GSI	7.20 / —
35-lb. 800 ft. GSI	8.28 / —
35-lb. 500 ft. GSO	6.21 / —

Boards, per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bichd. Mis. L-d. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices.

Rag Content Bonds and Ledgers—White, 20 lb.

Bonds	4 Cnts.
	per cwt.
100% Rag Ex. No. 1	$70.45/$72.10
100% Rag	62.45/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Cnts.
	per cwt.
100% Rag Ex. No. 1	$72.65/ —
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ —

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Cnts.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.05/ 19.50

Ledgers	4 Cnts.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book
Conversion Coated — Case

	per cwt.
No. 1	$23.40/$24.65
No. 2	21.90/ 23.40
No. 3	20.40/ 22.40
Machine Coated	
No. 1	$18.15/$18.40
No. 2	16.15/ 16.65
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.15
Offset	17.40/ 19.90
A Grade E. F.	17.40/ 18.15
A Grade S. C.	18.15/ 18.65
B Grade E. F.	17.65/ —
B Grade S. C.	16.90/ 18.40

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) PENDING OPS ROLLBACK, THESE PRICES REPRESENT CEILING RANGE.

	New York	Philadelphia	Boston	Chicago
	April 9	April 9	April 6	April 6
No. 1 Mixed Paper	$25.00/ 26.00	$26.00/ 27.00	$ — / 27.00	$27.00/ —
Boxboard Cuts	30.00/ 33.00	30.00/ 33.00	26.00/ —	32.00/ —
Mill Wrappers	30.00/ 35.00	30.00/ 35.00	30.00/ 36.00	29.00/ —
No. 1 News	27.00/ 29.00	28.00/ 30.00	28.00/ 31.00	32.00/ —
Over-issue News	40.00/ 45.00	40.00/ —	33.00/ 45.00	35.00/ —
Corrugated Containers	49.00/ 50.00	49.00/ 52.00	50.00/ 55.00	52.00/ —
New Corrugated Cuts	74.00/ 80.00	55.00/ 60.00	55.00/ 65.00	62.00/ —
Double Kraft Ld. Corr. Cuts	115.00/120.00	105.00/110.00	120.00/140.00	120.00/ —
100% Kraft Corr. Cuts	140.00/165.00	125.00/135.00	130.00/170.00	135.00/ —
Used Kraft Bags	85.00/ 95.00	80.00/ 85.00	85.00/116.50	65.00/ —
No. 1 Brown Kraft Paper	90.00/ 95.00	90.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft	100.00/105.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts	160.00/190.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts	150.00/170.00	130.00/135.00	150.00/180.00	140.00/ —
No. 1 Gdwd Shvs.	80.00/ 85.00	75.00/ 80.00	80.00/ 85.00	75.00/ —
White Newsblanks	115.00/125.00	110.00/115.00	110.00/130.00	113.00/ —
No. 1 Flyleaf Shvs.	80.00/ 85.00	90.00/ 95.00	95.00/110.00	110.00/ —
No. 1 Soft Wht. Shvs.	180.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs.	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs.	185.00/210.00	200.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts	200.00/245.00	225.00/ —	200.00/235.00	190.00/ —
New Manila Env. Cuts	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards	110.00/120.00	115.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards	170.00/185.00	165.00/175.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger	100.00/105.00	100.00/105.00	90.00/110.00	100.00/ —
White Ledger	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	55.00/ 60.00	40.00/ 45.00	40.00/ 60.00	35.00/ —
No. 1 Rep'd. Hvy. Books‡	65.00/ 70.00	50.00/ 60.00	60.00/ 75.00	55.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

No. 1 White Shirts	$25.00/$24.00
No. 1 Unbichd. Muslins	23.00/ 24.00
Bichd. Canton Flannels	17.00/ 18.00
No. 1 Lt. Silesias	12.00/ 13.00
No. 1 Lt. Prints	9.00/ 12.00
Wht. Bk. Blue Overalls (Bichable)	15.50/ 16.00
No. 1 Blue Overalls	7.00/ 8.00
Fancy Shirts	6.00/ 6.50
No. 1 Washables	5.50/ 6.00
Suntan Khaki Cuts	11.00/ 12.00
Mixed Khaki Cuts	9.00/ 11.00
Corduroy Cuts	4.75/ 5.25
Cottonades	7.00/ 7.50
Bichd. Underwear Cuts	nominal
Unbichd. Underwear Cuts	nominal

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$5.00/$5.50
Cotton Pants & Overalls	4.75/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	3.00/ 3.10
No. 2 Roofing Rags	2.40/ 2.50
No. 3 & 4 Roofing Rags	2.20/ 2.30
Roofing Bagging	2.20/ 2.30

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$4.75/$5.00
New Mixed Cuttings	4.75/ 5.25
Light Silesias	8.00/ 8.50
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.50/ 7.50

here's why Coating Formulas

should include

Calgon*

For starch, casein, or animal glue pigmented coatings, your formula should include Calgon, for Calgon has pronounced deflocculating properties on such materials as clay, calcium carbonate, titanium oxide and other pigments and fillers, and also exerts a dispersive action on the adhesive.

As a result, the addition of a small percentage of Calgon gives a coating which is smoother, more uniform, and more firmly bonded to the paper. With Calgon, a larger proportion of solids may be used in the coating mixture, thus facilitating the drying operation. In casein coatings, less casein is required.

We will be glad to have a Calgon technical representative call and give you full information. Just write and tell us when you would like to see him.

*T. M. Reg. U. S. Pat. Off.

HAGAN HALL BUROMIN CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING PITTSBURGH 30, PA.

Light Prints	6.50/ 7.50
Bleachable Khaki, No. 1	6.00/ 6.50
Unbl. Khaki, No. 1	5.00/ 5.50

Old Foreign Rags

(Prices to Mills, f.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	nominal
No. 2 White Cottons	nominal
No. 3 White Cottons	nominal
No. 4 White Cottons	nominal
Extra Light Prints	5.50/ 6.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	3.75/ 4.00
Dutch Blue Cottons	4.00/ 4.50
Linsey Garments	2.75/ 3.00
Dark Cottons, Egyptian	2.50/ 2.75
Dark Cottons, European	2.75/ 3.00
Old Shapperies	2.40/ 2.50
New Shapperies	2.50/ 2.75

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

MISCO
STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
DETROIT 7, MICHIGAN

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK
Manufacturer of
Machinery and equipment for Mechanical and Chemical Pulp Mills and Special Machinery

Pulp Plant Modernization
As a prerequisite to any modernization program, investigate the *Ferguson First Team* approach to *Material Handling* problems. Attain new economies in production schedules and in labor costs.
Preliminary Discussions in Confidence and Without Obligation.
THE H. K. FERGUSON COMPANY
ENGINEERS AND BUILDERS
Headquarters: Ferguson Building, Cleveland, Ohio
District Offices: New York, Houston, Chicago, Los Angeles, Cincinnati

pre-beating
SALES-GRADE PULP
opens up new markets. Write us.
SUTHERLAND
REFINER CORP., Trenton 6, N. J.

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$8.00/$8.25
Domestic Gunny, No. 1	7.75/ 8.00
Heavy Wool Tares	7.00/ 7.50
Foreign Manila Rope	7.25/ 7.75
Domestic Manila Rope	7.00/ 7.25
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	7.25/ 7.50
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	6.50/ 6.75
Domestic	7.00/ 7.50
Austr. Wool Pouches	7.50/ 8.50
New Burlap Cuttings	7.50/ 8.00

MATERIALS

Aluminum, sulfate:		
coml. bags, wks.	cwt. 1.65	
iron-free c.l.	3.25	
Alcohol, ethyl:		
tax free, dms. c.l.	gal. .77	/ 1.02
deld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms. c.l. fr. alld.	gal. .44	
Casein, acid-prec.:		
dom. sh. pt. c.l.	lb. .41	/ .45
imp. ex. dock	lb. .36½/	.39½
Caustic soda:		
c.l. wks. solid, 76%, cwt.	3.35	
flak. & grd. 100-lb. drums	3.75	
liquid 50% tanks	2.55	
liquid 70% tanks	2.65	
China clay:		
dom. air-float, filler, c.l. wks.	ton 18.00	
water-washed, lump, filler	11.00	
coating	17.60	/30.50
imported, ex whse.	short ton 15.20	/28.33
Chlorine:		
single-unit tanks, works	cwt. 2.70	
multi-unit	cwt. 3.20	/ 4.46
Formaldehyde:		
USP, inh. dms, c.l. wks.	lb. .0600/	.0625
l.c.l. E. wks.	.0650/	.0675
Fuel oil:		
Bunker C, No. 6 Cal. bvy		
tanks, refinery	bbl. 1.95	/ 2.15
light	bbl. 2.05	/ 2.10
Hydrogen peroxide:		
USP, 35% chys. E. of Miss.	lb. .24½/	.25½
Lime:		
hydrated, bags, wks. Buffalo	ton 13.50	
Rosin:		
B gum, drms, c.l. Savan.	cwt. 8.00	
G, H, I	cwt. 8.75	/
K	cwt. 8.75	/
FF, wood, do.	cwt. 7.20	/
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt.	cwt. 6.80	/ 7.00
Salt cake:		
dom. bulk, c.l. wks.	ton 17.00	
wks. frt. all.	ton 20.00	/22.00
Soda ash:		
light, 58%, bags, wks.	1.50	
bulk	cwt. 1.20	
Sodium silicate 40°:		
turbid. c.l. wks.	cwt. 1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.	lb. .19	
l.c.l. do.	lb. .19½/	.20
Soybean, protein:		
chem. isol, wks. c.l.	lb. .24	/ —
Cinn. and Chic.		
Sulfuric acid:		
60° Be. chys. cl. wks.	cwt. 1.75	/ —
l.c.l. wks.	cwt. 2.05	/ 2.60
Sulfur:		
crude, c.l. mines, contract,	long ton 21.00	/22.00
f.o.b vessels Gulf	22.50	/23.50
Export, f.o.b. Gulf	25.00	
Sulfur dioxide:		
liquid, coml. cyl. wks.	lb. .09	
multi-unit cars	lb. .0535	
Starches:		
pearl corn, bags, c.l. wks.	cwt. 6.12	/ —
white dextrines, c.l. wks.	cwt. 7.51	/ —
potato, Idaho, c.l. wks.	cwt. 5.50	/ —
potato, Maine, c.l. wks.	cwt. 5.25	/ —
tapioca, conv. dextrines	cwt. 8.25	/ 8.75
medium grds. Gulf and East Coast ports	6.75	/ 7.50
low, Siam, on dock N. Y.	5.75	/ 6.00 nominal
Talc:		
domestic, 50-lb. sacks, c.l. wks.	ton 25.00	/30.00
Titanium dioxide:		
anastase, c.l. deld., bags	lb. .21	/ .21½
l.c.l. deld.	lb. .22	/ .23½
rutile, c.l. deld.	lb. .23	/ .23½
l.c.l. deld.	lb. .24	/ .24½

N.B.: For special market conditions, see *Trends*.

IMPORT DUTY INFORMATION

The Bureau of Customs has denied a petition of the Specialty Paper and Board Affiliates for the imposition of a dumping duty on imports of Finnish Solid Woodpulp Board. The petition for relief prepared by the Import Committee of the American Paper Industry gave proof that imports are far below the Finnish home market price and have absorbed about one-third of the United States market. Although the Bureau decision does not specifically so state, it is apparent that the Bureau holds there has been no injury to the domestic industry in view of the fact that the United States producers have kept their machines active by shifting to other paperboards. The Washington Administration has seldom imposed a dumping duty, though the paper and other industries have repeatedly protested against the injury sustained from under-valued imports of foreign merchandise.

So-called "Typostat Paper," a sheet composed of two grades of paper laminated with aluminum foil, has been classified for duty at the rate for a manufacture in chief value of aluminum which is higher than that for manufactures of paper. The material is used as a substitute for metallic lithographic plates and also for some forms of multiprint reproduction of type text.

Four shipments of paper napkins from Norway, one from Denmark and two of creped paper from England, classified as manufactures of paper at 17½ percent, are claimed to be dutiable at 15 percent as paper cut into shapes in new cases filed in the United States Customs Court. In another case homemade paper from France is claimed to be dutiable at the lower rate for drawing paper.

The importer of a large shipment of printed unbound sheets of bible paper for missals has abandoned his claim in the United States Customs Court that the proper rate of duty was 4 percent as printed matter of foreign authorship. The shipment was classified for duty at the rate for bible paper of 2 cents per pound plus 5 percent.

At left, Steam Joint constructed for use with adjustable single Drop Type Siphon.

Below, Dual Revolving Type Siphon Arrangement.

Cuts Power Costs

It takes extra power to keep Dryers rotating at high peripheral speeds when condensate drainage is slow and inadequate. Power losses may range as high as 50%. Operating speeds and drying rate are reduced.

With Puseyjones Improved Steam Joints and Revolving Dual Siphons, condensate drainage is continuous and automatic. Dryer Cylinders are completely filled with steam. Power is saved. Drying rate is increased and higher operating speeds are realized. The unique Steam Joint design assures minimum friction resistance between revolving and stationary parts.

Many mills have included Puseyjones Steam Joints and Siphons in Machine modernization programs with outstanding production results. If your power costs are high and your present machines are not operating at their full potential, investigate the advantages of the Puseyjones Steam Joint and Siphon. For complete information, write today for your copy of the "Steam Joint Bulletin."

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Fabricators and Welders of All Classes of Steel and Alloy Products

Wilmington 99, Delaware, U.S.A.

THE SIGN OF SUPERIOR QUALITY

CORROSION NOW POSES A DOUBLE THREAT

Worn out and corroded equipment may not be replaceable

Don't take chances on vital equipment. Scarce metals and materials are becoming scarcer. Farsighted business men are rebuilding, repairing and *protecting* to insure continuity of their operations.

Do these two things today:

1. Check up in your plant—manufacturing equipment, piping, valves, tanks, motors, and all similar items.
2. Arrange to protect them with Amercoat—the corrosion-resistant coatings; each designed to meet specialized conditions.

Note: Most conventional coatings fail under severe service conditions. They are neither designed nor suitable for such applications.

AMERCOAT CORPORATION

A Division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, Calif.

1-51a

Financial News

STOCK REPORT

	Per Share Earnings: Calendar Year 1949	Per Share Earnings: 12 Mo. to Approx. 12/31/50	Indic. Annual Divid. Rate	April 11 Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.80*	$3.75	97⅞
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.80*	4.00	118
Celotex Corp. 5% Cum.	6.80c	14.34h	1.00	17½
Champion Paper & Fibre $4.50 Cum.	60.09f	101.62	4.50	102
Container Corp. of Amer. 4% Cum.	89.52	123.64	4.00	101¼
Crown-Zellerbach $4.20 Cum.	54.38c	67.00h	4.20	101½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	16.31	2.50	59
Flintkote Co. $4.00 Cum.	62.70	90.41	4.00	101½
Robert Gair Co., Inc., 6% Cum.	13.79†	21.28†	1.20	19¾
International Paper Co. $4.00 Cum.	224.55	289.77	4.00	103
Kimberly Clark Corp. 4% Cum.	85.27	114.95h	4.50	108¾
MacAndrews & Forbes 6% Cum.	61.59	63.03i	6.00	135
Mead Corp. 4¼% Cum.	51.37	97.08	4.25	99¼
Mead Corp. 2% Cum. Conv. 2nd	31.35*	40.05*	2.00	60
Pabco Products, Inc., 4% Cum. Conv.	56.46	120.13	4.00	101
Rayonier, Inc., $2 Cum.	9.54	17.25	2.00	36¾
St. Regis Paper Co. 4.40% 1st A	30.74	65.23	4.40	92
Scott Paper Co. $3.40 Cum.	51.15*	65.41*	3.40	95½
Scott Paper Co. $4.00 Cum.	51.15*	65.41*	4.00	103¾
Sutherland Paper 4½% Conv.	46.92	81.31	4.25	118
U. S. Gypsum Co. 7% Cum.	283.37	348.48	7.00	178½
United Wallpaper Inc., 4% Cum. Conv.	2.14	0.84	2.00	26
West Virginia Pulp & Paper 4½% Cum.	61.28c	99.26h	4.50	109½
COMMON STOCKS				
APW Products Co.	(d)0.81	0.45i	—	7½
American Writing Paper Corp.	.04	2.02	0.50	10
Armstrong Cork Co.	6.57	8.13	3.75	57⅝
Celotex Corp.	1.65c	3.78h	1.00	17½
Certain-Teed Prods. Corp.	2.84	3.92	1.50	16¾
Champion Paper & Fibre	5.15f	9.44	2.45	53½
Congoleum Nairn Co.	3.84	3.29	2.00	26
Container Corp. of America	4.23	5.87	2.50	38
Crown-Zellerbach	6.02e	7.34h	2.20	50¾
Dixie Cup Co.	7.44	12.18	1.50	58¾
Eastern Corp.	0.04	4.30	1.00	19¾
Flintkote Co.	4.33	5.83	3.00	30¾
Robert Gair Co., Inc.	2.11†	3.37†	0.70	13
Great Northern Paper Co.	4.87	4.33	3.00	49¾
International Paper Co.	7.12	7.39	2.50	51½
Johns-Manville Corp.	4.63	7.22	3.50	57⅜
Kimberly Clark Corp.	5.29	6.28h	1.80	44
MacAndrews & Forbes Co.	3.64	3.74i	3.00	40½
Marathon Corp.	1.29c	1.40h	1.40	43¾
Mead Corp.	4.10	5.64	2.20	24½
National Container Corp.	0.93	2.41	0.75	13
Pabco Products, Inc.	0.85	1.87	0.60	19¾
Rayonier, Inc.	4.75	9.61	2.50	50¾
Ruberoid Co.	7.93	9.64	3.18	57¾
St. Regis Paper Co.	0.91	2.10	0.60	13
Scott Paper Co.	3.04	3.90	2.00	48½
Sutherland Paper Co.	4.63	7.66	2.75	47¾
Union Bag & Paper Corp.	5.81	7.23	3.00	40¾
United Board & Carton	(d)1.61b	2.71g	0.50	18¾
U. S. Gypsum Co.	13.51	16.70	10.00	118½
United Wallpaper	(d)0.01	(d)0.01	—	3¾
West Virginia Pulp & Paper	8.58c	13.73h	5.00	78½

(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 10/31/50
(f) 9 months to 12/31/49
(g) 12 months to 2/3/51
(h) 12 months to 1/31/51
(i) 12 months to 9/30/50
(*) Earnings per combined preferred shares
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., recorded a net income for 1950 or $1,870,928 after all charges and provisions for taxes.

The 1950 income was more than double the $871,928 earned in 1949, but failed to equal the earnings for either 1947 or 1948, Mr. Alexander reported. Earnings per share of capital stock outstanding were $5.40 in 1950 compared with $2.51 per share in 1949.

A 1950 sales increase of 17 percent was noted, with a total of 82,979 tons produced and sold. Net income for 1950 sales totaled $19,460,066, up 22 percent from the $15,951,826 volume of 1949. Tonnage and dollar sales of writing paper grades were the highest in company history and specialty paper sales also showed an increase over the previous year.

Cash dividends of $1.75 per share were paid during 1950 compared with a $1.35 per share for 1949.

TIMELY HELP FROM TITANOX RESEARCH:

a swing to
PIGMENTED
light weight papers
HELPS EXTEND PAPER-MAKING SUPPLIES

Pigmentation with titanium dioxide makes possible the manufacture of light weight papers with no increase in show-through, no loss of brightness or opacity. This type of processing enables you to increase the usefulness of your paper-making raw materials—a worthwhile consideration in times of tight supply.

Many years of research in the pigmentation of light weight papers are reflected in today's TITANOX titanium dioxide pigments. TITANOX-A, the water-dispersible titanium dioxide, and the rutile-calcium pigment, TITANOX-RCHT, whiten, brighten and opacify paper by addition to the coating or directly to the beater. Their optimum particle size insures easy mixing and complete dispersion. These qualities are vital to light weight paper pigmentation.

Whatever type of paper you produce, if you need whiteness, brightness or opacity—our Technical Service Department is always available to help you get the maximum out of your TITANOX pigment supply. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments, Ltd., Montreal 2; Toronto 1.

TITANOX
the brightest name in pigments

TITANIUM PIGMENT CORPORATION
Subsidiary of NATIONAL LEAD COMPANY

Let's Make the Most of Our Productive Might

THE productive might that has given America the most fruitful peace-time economy in history—the productive might that has backed to a victorious limit in two twentieth-century wars the fighting men who inevitably are our first line of defense—is facing an even greater test. It must not—it cannot be wasted!

The era of fighting and winning wars, and settling back during interims to "business as usual," is past. When it passed, how it passed, doesn't matter. What does matter is that from here on in, perhaps, there'll be no more "indolent" years—no more building of bathtubs to the exclusion of battleships; no more butter at the expense of bombs.

But America's unmatched productive might is fully capable of building bathtubs *and* battleships, of providing butter *and* the bombs requisite to war or to prevention of war; capable, that is, if properly employed—if none of it is wasted.

More And Better Tools Needed

THIS means that the manpower and womanpower left to industry after military needs have been satisfied, must be given every cost-cutting tool, every time-, labor- and muscle-saving aid known to man. It means that these tools must be employed intelligently and efficiently.

At the Fourth National Materials Handling Exposition,* to be held in the International Amphitheater in Chicago, April 30—May 4, 1951, the CLARK EQUIPMENT COMPANY'S INDUSTRIAL TRUCK DIVISION, along with several hundred other producers of materials-handling equipment, will show to industry the newest, the most efficient and the most effective tools in the world for *making the most of America's productive might*. It is a show that no industrial executive can afford to miss—it is the MUST of the Industrial Show year. It is a MUST not only from the point of economy and profits within your own operation—but also from the point of *accomplishing the vast production necessary to the new Military Economy without imposing harsh austerity on the Civilian Economy.*

More Power For Manpower—In Action

CLARK will show and demonstrate its full LEADERSHIP LINE of fork-lift trucks, powered hand trucks and industrial towing tractors. Among them will be several machines never before shown—some of them not yet in production. The exhibit also will present special handling attachments of proved worth, and demonstrations of their rich usefulness.

By all means attend and study this tremendously important show. And make a special point of seeing the CLARK exhibits and demonstrations of the best machines in their field for giving MORE POWER to MANPOWER.

*(*We'll be glad to supply registration—admission tickets. Just address your request to the Clark Equipment Co., Industrial Truck Division, Battle Creek 58, Michigan, telling us how many you want.)*

Bathurst Power and Paper Co., Ltd., voted 75 cents on Class A stock payable June 1 to stockholders of record on May 4. The company previously paid 50 cents quarterly.

Rayonier Incorporated earnings for the first quarter of 1951 are expected to be about $2.75 per common share after payment of preferred dividends. This estimate is based on present federal income tax rates and on the assumption that any price roll-backs that may be made will not be retroactive. This compares with $2.02 per share in the first quarter of 1950.

First quarter sales amount to approximately $20,500,000 from shipment of 105,868 tons of the Company's products.

Stockholders approved adoption of a stock option plan to provide key employees with an opportunity for purchase of the company's common stock.

The common dividend was placed on a regular $3 per annum basis by declaration of a quarterly dividend of 75 cents per share, payable May 15 to stockholders of record April 27. The common dividend has been on a basis of 50 cents quarterly, with 25 cent extras paid during the past three quarters.

Dryden Paper Co., Ltd., has declared a dividend of 40 cents quarterly, payable May 1 to stockholders of record March 31.

Atlanta Paper Co. has declared a dividend of 10 cents a share on the common stock of the company, payable April 15 to stockholders of record April 2.

RUBEROIDS NEW MILL

(Continued from page 37)

after month until, after seven months, an average of 66 tons was achieved.

The weight and caliper variations across the sheet are within 3 percent. This and the large, tightly wound rolls weighing as much as 6800 lbs. have helped the saturating department tremendously, increasing their production by 10 percent and decreasing their waste to a negligible amount.

Through painstaking engineering and planning done in Bound Brook, N. J., by W. J. Van Akin, Charles Limerick and Ed Morris, this project was conceived and through the able leadership, hard work and persistence of Ralph Reade and Ed Talbot, the finest felt mill in the south came into being. Mr. Talbot remains in Mobile as felt mill superintendent.

This mill is unique in being one of the few felt mills, built up from a bare tract of land, in completely new buildings, and using new equipment. It is the type of mill in which all felt makers hope some day to be able to work. It proves the desirability of new equipment and sound overall engineering for felt manufacture.

ASSOCIATIONS

METRO TAPPI ELECT WILLETS

NEW YORK—Slate of officers for the year beginning in September, 1951, was elected at the dinner meeting of Metropolitan TAPPI at Fraunces' Tavern, April 3. William R. Willets, Titanium Pigment Corp., was named chairman, and Ralph W. Kumler, American Cyanamid Co., vice-chairman. The executive committee consists of J. F. Butterworth, Socony-Vacuum Oil Co.; John H. Doherty, Union Bag & Paper Corp.; Robert T. Emerson, Manifold Supplies Co.; Lewis S. Reid, Metropolitan Life Insurance Co.; Paul L. Haggerty, George Lamonte & Son.

Problems of waste paper marketing, quality and supply were the subject of an animated after-dinner panel discussion. Speakers were Sam Hershman, president of I. Hershman & Co., of New Haven, Conn.; Anthony Gaccione, president of Toga Paper Stock Co., New York; and J. A. Cauwels, purchasing agent, Federal Paper Board Co., Inc., Bogota, N. Y.

ENGINEERS ELECT NICASTRO

The Executive Committee of the National Society of Professional Engineers has announced the election of George J. Nicastro as vice-president in charge of the Northeastern Region. A sales engineer with Combustion Engineering-Superheater, Inc., New York, Mr. Nicastro has long been active in affairs of the Society which now number 23,000 members among 35 state chapters.

TO ADDRESS SUPTS.

John Kennedy, superintendent, Champion-International Co., Lawrence, Mass., is to address a dinner meeting of the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents Assn. on May 18, at the Roger Smith Hotel, Holyoke, Mass. His subject is to be Operations Management. The address is to deal with quality control, operations control and preventive maintenance as guiding factors of paper mill supervision.

The meeting will be stag—it will open at 6:15 p.m. with a cocktail party sponsored by the suppliers—the dinner follows at 7:30 p.m.

MAINE-N. H. TAPPI

The annual meeting of the Maine-New Hampshire Section of TAPPI will be held at Eastern Slope Inn, North Conway, N. H., June 22-23.

The feature of the meeting will be "Semi Chemical Pulp." Dr. J. J. Thomas is chairman of the program, Jack Wright of the local arrangements.

A mill visit to Brown Co. June 22 is scheduled.

...YOUR TEST IS BEST...

Properties

"Properties"—is a nice sounding word, but when you're talking about microcrystalline waxes it simply doesn't mean much. The dividing lines between various types of micro-waxes are so hazy that efforts to scientifically classify them simply haven't been too successful. That is why Bareco continually urges you to **write for samples** of their performance-proven waxes. If you were to receive a personal letter from one of Bareco's chemists, this is probably the way it would read, "Dear Mr. Industry: We produce top grade microcrystalline waxes but we don't know all of your problems. Why not consult with us, as so many others have done, to determine how our waxes can be used in your processes. You may never realize how they can help unless you take samples of our product and test them in your own laboratory. We will send samples for your investigation. If technical assistance is needed we will be glad to help." Bareco waxes MAY save you a lot of money . . . Bareco waxes MAY put you on the road to a better product . . . why don't you find out by writing for samples today. In meantime, here's food for thought—

Very low water transmission rates.
Free of objectionable odors.
Chemically inert.
Excellent heat sealing characteristics.
Supplied in a wide range of melting points, color, and hardness.

WRITE FOR "THE WAX STORY", A NEW PAMPHLET SERIES

BARECO OIL CO.
BOX 2009 TULSA, OKLA.
121 S. BROAD ST. PHILADELPHIA, PA.

W.P.I. ELECTION

The Waste Paper Institute has named the following officers: Haskell Stovroff, Buffalo, N. Y., president; Stuart B. Sutphin, Cincinnati, O., vice-president; Jean B. Charak, St. Louis, Mo., treasurer; and Clinton M. White, New York City, secretary. Paul J. White, New York City, was named Eastern vice-chairman, and Harold Shilling, Chicago, will be Western vice-chairman.

DYESTUFF MAKERS SINCE 1859
Processed in U. S. and Canada by
GEIGY COMPANY, INC.
Branches: BOSTON • CHARLOTTE, N. C. • CHICAGO • LOS ANGELES • PHILADELPHIA PORTLAND, ORE. • PROVIDENCE • TORONTO

For Your Engraving Needs Use
NORTHERN ROLLERS
Engraved by
NORTHERN ENGRAVING AND MACHINE COMPANY
Green Bay, Wisconsin

FIBER RESEARCH AND SERVICE
Semi-Chem. and Chemical Pulp Processes
Pilot Plant Facilities
THE KINSLEY CHEMICAL COMPANY
Cleveland 11, Ohio

INTERNATIONAL WIRE WORKS
Fourdrinier Wires
MENASHA, WISCONSIN

ASTEN
"When better dryer felts are made . . ."
ASTEN-HILL MFG. CO., Philadelphia, Pa.
ASTEN-HILL LTD., Valleyfield, Quebec

NEW LITERATURE

South Bend Lathe Works. Booklet, "How to Run a Lathe," pp. 128, price 25c. Illustrates and describes, in non-technical language the fundamentals of operation of a modern Screw Cutting Engine Lathe.

Barco Manufacturing Co. Catalog No. 300, "Revolving Joints." Sales copy and technical data on the new, improved type of revolving joint for piping connections to drum type dryers, rolls, calenders, etc.

Towmotor Corp. Booklet, "The One Man Gang." Sales copy on a 30-minute sound movie on materials handling.

Commodity Research Bureau, Inc. Handbook, "Your Social Security Benefits." Reveals benefits resulting from the 1950 changes in the Social Security Law.

General Electric Co. Bulletin GEA-1054B, "Pinions and Gears — For Transportation Equipment." Pictorially describes manufacturing and testing facilities used for gear manufacturing.

Westinghouse Electric Corp. Booklet B-5160, "A Planning Guide for Industrial Air Conditioning." Technical data reduced to understandable terms.

Paul Valve Corp. Sheet, "Cardboard Model Demonstrates Unique Action of Paul Venturi-Ball Valve."

Vulcan Soot Blower Div., Continental Foundry & Machine Co. Bulletin 486, "New Vulcomatic E-4 Rotary Soot Blower Head." Technical data and sales copy.

West Virginia Pulp & Paper Co. Booklet, "Growing and Harvesting Tree Crops," 72 pp. Prepared by veteran forest experts of the paper company, booklet tells how pulpwood can best be grown and cut to grow again in areas that supply the Appalachian mills of the company. Illustrated and fully indexed for handy reference.

Worthington Pump & Machinery Corp. Folder, W-350-M4B. "Composite Analyses of Stainless Steels With Wrought Materials Type Numbers and Casting Designations.

Bakelite Co., Div. of Union Carbide and Carbon Corp. Booklet, "The Story of Surface Coatings Based on Vinylite Resins." Discusses and illustrates the many essential applications. Also the variety of surfaces which can be coated.

Cochrane Corp. Bulletin, Publication 4520, "Cochrane Zeolite Softeners featuring the Cochrane Hydromatic Single Control Valve." A detailed explanation of the process, includes a definition of terms employed, data necessary for laying out a zeolite water softening plant, factors governing the sizing of such equipment, etc. Includes pictures and diagrams of equipment in operation.

Baldwin Duckworth, Div. of Chain Belt Co. Bulletin #51-10. Informative handbook for designers of Tension Linkages—termed as any chain application in which linear movement of the chain is not continuous in direction.

Clark Equipment Co. Magazine, "Material Handling News." Features "new and better" mechanized materials handling. Included are two invitation-registration tickets to the National Materials Handling Exposition at the International Amphitheatre in Chicago, April 30 to May 4.

Cleveland Mixer Co. Bulletin No. 151. General sales circular on standard agitator turbines, complete mixing kettles and tanks, ribbon blenders, flocculator, etc.

SUPPLIERS

WESTINGHOUSE ELECTRIC CORP., Pittsburgh, Pa., has appointed Henry R. Michel, assistant to Andrew H. Phelps, vice-president in charge of purchases and traffic. In his new position, Mr. Michel will be assigned to the Washington, D. C., office of Westinghouse, with responsibility for all matters pertaining to purchasing as it is affected by governmental regulations.

LIBBEY-OWENS-FORD GLASS CO. has added to the Research Department of the Plaskon Division Dr. M. F. Browne. Dr. Browne will participate in research on glues and industrial resins.

SIGNODE STEEL STRAPPING CO., Chicago, has opened a permanent Chattanooga office, headed by Joseph T. Holleman. This office will service an area including parts of Alabama, Georgia, Kentucky and Tennessee.

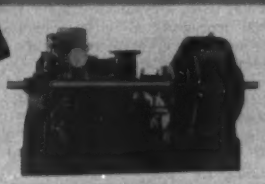
METAL CARBIDES CORP., Youngstown, Ohio, announces an 8,000 square foot addition to their plant. Office space is being doubled. Over $100,000 of new equipment, including electric furnaces, machine tools, powder mixing and crushing equipment is being added.

BURRELL CORP. has announced removal of its offices and laboratories to 2223 Fifth Avenue, Pittsburgh 19, Pa. All needed facilities for the manufacture and distribution of scientific apparatus and laboratory chemicals have been brought together in one modern building.

3 Ways To More And Better Paper At Less Cost

TYPICAL ARRANGEMENTS OF WORTHINGTON STEAM TURBINE PAPER MACHINE DRIVES

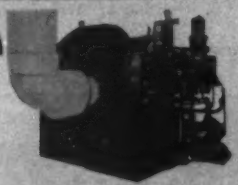
1.



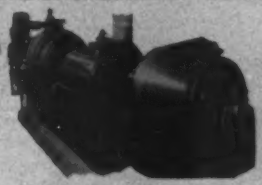
DOUBLE END DRIVE—Extremely compact, ideal for limited space. Also reduces torsion stresses, an advantage when load is increased beyond original plan. Easily fitted into existing setup by removing section of back line shaft connecting each end of drive to line shaft by flexible couplings.

SINGLE END DRIVE—Where required, this type can be direct connected to end of line shaft. Is space-saving, positive-acting and eliminates power losses, maintenance expense and hazards of belted drives.

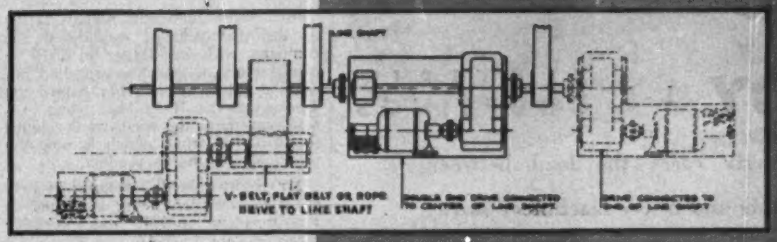
2.



3.



BELTED DRIVE — Furnished wherever conditions require. Units consist of turbine, reduction gear and pulley, on baseplate. Pulley, on separate shaft, is connected to gear by flexible coupling. The most satisfactory drive in many cases, especially with small hp's. Changeover can be made in a few hours.


LINE SHAFT
V-BELT, FLAT BELT OR ROPE DRIVE TO LINE SHAFT
DOUBLE END DRIVE CONNECTED TO CENTER OF LINE SHAFT
DRIVE CONNECTED TO END OF LINE SHAFT

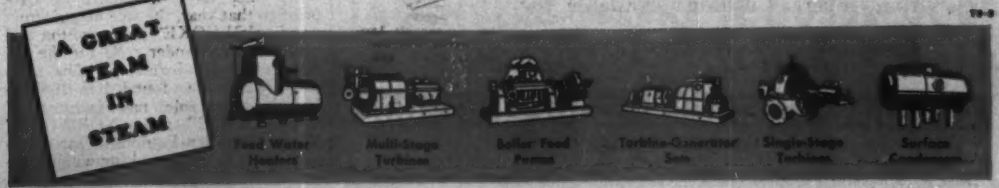
Shaving Low power may be applied at center of line shaft (Double End Drive), at end of shaft (Single End Drive) or by belt (Belted Drive).

Get The Most From Your Machines

Take advantage of Worthington's long, successful experience in engineering paper machine drives. Get steadier, higher, more accurately controlled speeds, for bigger and better production. Get the efficient design and sturdy construction that assure long, trouble-free, low-cost service . . . And get the facts proving *there's more worth in Worthington.* Write to *Worthington Pump and Machinery Corporation, Steam Turbine Division, Wellsville, N. Y.*

WORTHINGTON

Steam Turbines



OMEGA MACHINE CO., Providence, R. I., manufacturers of chemical feeding equipment, has announced the appointment of Andrew A. Melnychuk as project engineer in the home office of the company.

ALEXANDER BROTHERS BELTING CO., a newly formed Pennsylvania corporation, has purchased Alexander Brothers, Philadelphia, Pa., and Charlotte Leather Belting Co., Charlotte, N. C., from Armour and Co., with the exception of the Curried Leather Department, which will continue to be operated by Armour Leather Co., Division of Armour and Co.

The new company will operate as Alexander Brothers Belting Co. and Charlotte Leather Belting Co. which will be a Division of said company.

Officers and Directors are as follows: G. L. Bryson, president and general manager; Geo. L. Abbott, vice-president and treasurer; Edward P. Alexander, secretary.

STEIN, HALL & CO., INC., 285 Madison Ave., New York 17, N. Y., announces the appointment of Daniel H. Lipman as assistant general sales manager.

Edwin A. O'Neill, formerly manager of Stein, Hall's St. Louis office, will succeed Mr. Lipman as manager of the New York sales office.

LOUIS E. WOLFSON

Louis E. Wolfson was elected chairman of the board of directors of Merritt-Chapman & Scott Corp., construction engineers, on April 4. He succeeds Thomas A. Scott, 73, who continues as a director and who was named by the board to serve as its honorary chairman. Mr. Scott, who has served with the organization for 53 years, had asked to be relieved of his responsibilities as an officer.

TOWMOTOR CORP. announces that Lester M. Sears, founder and president of the corporation, since its establishment, has recently been elevated to chairman of the board of directors. C. Edgar Smith, executive vice-president, was elected president to succeed Mr. Sears.

Mr. Sears, who will remain active in the management, established the company with his father in 1919 to manufacture a gasoline-propelled industrial tractor which they named the Towmotor, the "One Man Gang." A few years later the company developed the fork lift truck which is now the principal Towmotor product.

Mr. Smith joined Towmotor in 1941 as sales manager, being advanced to vice-president in 1943 and executive vice-president in 1947.

Towmotor also announced that Robert L. Fairbank, for 18 years with Firestone Tire and Rubber Co., is joining the company as sales manager.

GENERAL ELECTRIC'S Control Divisions at Schenectady, N. Y., have appointed William F. Oswalt and Frank T. Gamec assistant manager of manufacturing and production manager, respectively.

HOLYOKE MACHINE CO., Holyoke, Mass., wishes to clarify the fact that it is now, and has been continuously since 1880, or from some date prior to that year, the sole manufacturer of "HOLYOKE" paper, cotton and combination calender rolls for the paper and textile industries. The company, which was founded in 1863, is likewise the sole manufacturer of "HOLYOKE" and "NORWOOD" Water Filtration Equipment for industrial, institutional and municipal applications.

LOVEJOY L-R FLEXIBLE COUPLINGS

They unfailingly carry the load between powerful motors and heavy machinery in the paper industry. These rugged couplings effectively counteract misalignment, vibration, backlash and surge. Resilient, free-floating load cushions, suspended between strong metal jaws, may be changed without shut-downs. No metal-to-metal transmission. No metal wear. No lubrication—ever. Cushions available for every duty . . . 1/6 to 2500 H.P.

Get the complete Lovejoy catalog with Quick-finding Selector Charts.

LOVEJOY FLEXIBLE COUPLING CO.

5069 W. Lake Street, Chicago 44, Illinois

Also Mfrs. Lovejoy Universal Joints and Lovejoy Variable Speed Transmissions.

CERTAIN-TEED BUILDS MILL

Construction of a paper mill at Pryor, Okla. has been confirmed by Certain-teed Products Corp. The new mill will be built for and operated by the Coronado Mfg. Co., a wholly-owned subsidiary of Certain-teed. It will produce papers used in the manufacture of Certain-teed's gypsum sheathing, lath and wallboard, and is scheduled to begin operation in January, 1952.

Company officials pointed out that while the mill is a step toward a more integrated operation, recent additions and expansion at its gypsum board plants have greatly increased production capacity and resulted in a greater demand for paper. The new mill will supply only a portion of Certain-teed's total paper requirements.

The mill is being built on a 30-acre site and will provide 100,000 square feet of floor space. Daily capacity will be 100 tons of paper. The plant will employ about 150.

BAGASSE MILL FOR FLORIDA

The United Bagasse Cellulose Corp., Clewiston, Fla., has been organized to manufacture newsprint, book and other papers from sugar cane (bagasse). The proposed mill will have a capacity of 45,000 tons per year. J. de la Roza, who has an office in New York City, is president and the mill will use his patents for producing the paper.

EQUIPMENT SUPPLIERS TELL WHAT'S NEW

The Michigan Division of the American Pulp and Paper Mill Superintendents Assn., at its dinner meeting of March 15 at Hotel Harris, Kalamazoo, received up-to-the-minute information on stock preparation equipment developments direct from experts representing nine manufacturers of such equipment. The names of the representatives and the firms with which they are associated follow: Roger J. Shouvlin, The Bauer Brothers Co., Springfield, Ohio; Arthur W. Griffith, Douglas Robbins & Co., Middletown, Ohio (representing Hermann Manufacturing Co., Lancaster, Ohio); Richard Ahrens, Improved Paper Machinery Corp., Nashua, N. H.; Charles H. Vickery, E. D. Jones & Co., Pittsfield, Mass.; R. Burke Morden, Morden Machines Co., Portland, Ore.; H. A. Ronningen, The Noble & Wood Machine Co., Hoosick Falls, N. Y.; T. Agronin, Shartle Brothers Machine Co., Middletown, Ohio; R. Bennett, Valley Iron Works Co., Appleton, Wis.; and Richard W. Polleys, Downingtown Manufacturing Co., Downingtown, Pa.

Two of the experts covered their subjects with the help of lantern slides; a third with a moving picture.

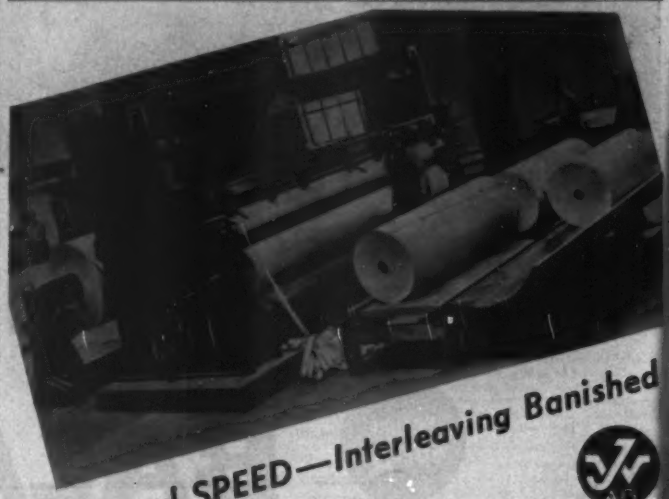
A question and answer session followed the remarks of the machinery representatives. Merle Wilkins, Kalamazoo Paper Co., served as moderator of this part of the meeting. He was assisted by a panel of mill men from the Kalamazoo area.

The panel members, in addition to Mr. Wilkins, were: Alfred B. Perlick, beater room superintendent, Kalamazoo Vegetable Parchment Co.; Harrison Kindig, assistant superintendent, Mac Sim Bar Paper Co.; Wendell R. Tobin, technical superintendent, American Box Board Co.; Herbert B. Johnston, plant engineer, Allied Paper Mills; Melvin J. Killian, technical superintendent, Bryant Division, St. Regis Paper Co.; and Louis J. Scheid, general superintendent, Watervliet Paper Co.

O. W. Callighan, Edgar Brothers Co., chairman of the Michigan Division, presided at the meeting.

Mr. Morden, of Morden Machines Co., not only participated in the industrial part of the program, but also reported on the progress being made in shaping up the program for the 32nd annual convention of the national association to be held June 24-28, 1951, at the Multnomah Hotel, Portland, Ore. He likewise told of the arrangements that have been completed with the Great Northern Railway for the operation of a special train for the convention from Chicago to Portland, Ore., and of the ample hotel accommodations in Portland for the meeting.

Pictures on page 82



Sensational SPEED—Interleaving Banished

JAGENBERG

SUPER SPEED MILL TYPE WINDER

UP TO 6,500 FEET

New ingenious Shear Cutting System. Simple and quick change-over of sizes. Precision built for dependability. Automatic hydraulic controls.

Ask Us About the Savings

JAGENBERG-WERKE A.G. DUSSELDORF

General Factory Representatives:

Graphic Arts International Corp. 1 Grand Avenue, Englewood, N. J.

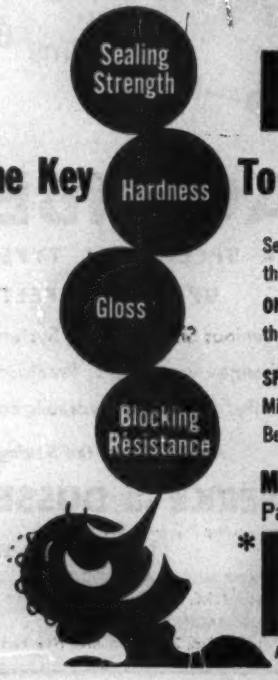
NEW ENGLAND AND MIDDLE ATLANTIC STATES
William J. Dorsey, Room 423-E, 30 Church St., New York 7

SOUTHERN AND PACIFIC COAST STATES
American Paper and Pulp Co., Inc., 300 Fourth Ave., New York 10

Top Row—L. to R.—A. W. Hartman, Glen Sutton, R. W. Polleys, Ray Bennett, Lee Eberhardt, Arthur Griffith. Middle Row—L. to R.—Merle Wilkins, O. W. Callighan, Burke Morden, Richard Ahrens, Charles H. Vickery, Ray Barton, Richard H. Peeters. Bottom Row—

Panel of Mill Men—L. to R.—L. J. Schied, Walter Wolfe, Herbert B. Johnston, Harrison Kindig, Wendell R. Tobin, and Alfred B. Perlick.

Pictured at left—
R. T. Agronin (left) and H. A. Ronnigen



BALANCE

Is The Key To Outstanding Wax Performance!

Sealing Strength, Hardness, Gloss, Blocking Resistance — These are the qualities you demand of paper coated with unmodified paraffin wax.

ONLY WITH A PROPER BALANCE OF SPECIFICATIONS can you obtain these qualities!

SPECIFICATION BALANCE of each ingredient is also necessary in Polythene — Microcrystalline — Paraffin mixtures for the New Mirror Gloss Coatings. Best all-around performance demands it!

MOORE & MUNGER SPECIFICATIONS Mean Perfection in Paraffin Wax • Microcrystalline Wax • Polythene Concentrates

*Mamspec

Moore & Munger—33 Rector Street New York 6

*TRADE MARK

Letter to Editor

Miss E. P. Nuttall, Associate Editor
PAPER TRADE JOURNAL
Lockwood Trade Journal Co., Inc.
15 West Forty-seventh Street
New York 19, U.S.A.
Dear Miss Nuttall:

We wish to thank you very much for your kind answer of March 15. The informations on Swedish pulp prices contained in your letter and a tear sheet from the Swedish Wood Pulp Journal are certainly of great value to us.

The world pulp shortages and high prices constitute the most serious problem to the paper makers in Japan just as the case with you. The Swedish unbleached sulphite was quoted at $325 per short ton, C.I.F. Japan, about two to three weeks ago. At this writing, it is quoted as high as $360. These spot offering prices are, of course, prohibitive to us. We are not able to absorb such high costs, even though they are to be averaged with own pulp and comparatively cheap domestic market pulp.

In this connection, we shall be glad if you continue to put emphasis on price informations of market pulps in your "Trends" columns. We are particularly interested in the price relationship between rayon pulp and paper pulp, since there are some instances here in Japan that the Swedish and Canadian sulphite, rayon grade, are offered at relatively cheap prices as compared with sulphite, paper grade.

We shall always be glad to serve you in a little way, if you need informations about pulp and paper market trends in Japan.

Yours sincerely,
Honshu Paper Mfg. Co., Ltd.
Pulp Procurement Section
S. Hondo, Chief

GEORGIA PULP INCORPORATES

DOVER, Del. — Georgia Pulp and Paper Co., has filed a charter of incorporation with the corporation department of the Secretary of State's office. Capital of the firm was listed at 100 shares of stock, no par value. Corporation Trust Co., 100 West Tenth St., Wilmington, Del., is serving as the principal office.

PRODUCTION RECORD SET

CORINTH, N. Y.—The Hudson River Mill of the International Paper Co. established a new daily production record on March 13 when 442.9 tons of paper were produced on the eight machines. The former record was 422 tons made on Aug. 22, 1950. The management claimed that the new record was made possible by the improvement on No. 4 machine and the efforts of all employes in making full use of all the facilities provided.

EVERY SHIPMENT BECOMES FAST FREIGHT

FOR EVERY INDUSTRY, Towmotor Mass Handling provides *swift movement* of materials . . . the greatest single step to increased productive output and lowered costs. Record-breaking speed in unloading carloads of materials, and fast in-plant movement of heavy loads are commonplace when Towmotor Mass Handling makes "*fast freight*" of every shipment in thousands of America's leading plants. Twelve Towmotor models, with capacities from 1,500 to 15,000-lbs. simplify and speed-up every type of handling job. Learn the right answer to cost-cutting efficiency in your plant. Send the coupon today for new folders describing the complete Towmotor line and special engineering features. Representatives in all principal cities in U. S. and Canada.

MH* for METAL PRODUCTS
In Metal Products manufacturing, the speed of Towmotor Mass Handling reduces man-hour costs as much as 60%. Damage is reduced, inventories are simplified and employee injuries decreased when Towmotor does the heavy work.

MH* for WAREHOUSES
In lifting and stacking heavy loads ceiling-high, Towmotor Mass Handling often doubles and TRIPLES storage capacity without increasing floor area.

MH* for FOODS and DRUGS
Tremendous man-hour savings are possible when Towmotor Mass Handling moves 3,000-lb. loads from receiving to storage or processing in less than one minute!

*MH is MASS HANDLING systematic movement of the most units in the shortest time at lowest cost.

TOWMOTOR
THE ONE-MAN-GANG
FORK LIFT TRUCKS and TRACTORS
RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

TOWMOTOR CORPORATION, DIV. 17
1226 East 152nd Street, Cleveland 10, Ohio

Please send me the new Towmotor folders, describing the complete Towmotor line and special engineering features.

Name _____
Company _____
Address _____
City _____ Zone _____
State _____

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Mar. 3	Mar. 10	Mar. 17	Mar. 24	Mar. 31
1951	102.7	101.3	103.1	102.6r	101.8
	Mar. 4	Mar. 11	Mar. 18	Mar. 25	Apr. 1
1950	95.8	96.8	96.5	97.6	97.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	93.6	96.7	93.4	94.4	97.7	85.3	99.6	96.1	101.2‡	100.3‡	93.7‡	93.8‡
1951	99.3‡	101.3‡	102.3‡										

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	88.3	88.4	99.1	105.1	100.5	92.1	95.1	101.1
Year Average	88.1	89.4	100.1	104.3	96.2	88.6	95.8‡	

PAPERBOARD OPERATING RATIOS†

	Mar. 3	Mar. 10	Mar. 17	Mar. 24	Mar. 31
1951	103	106	106	105	103
	Mar. 4	Mar. 11	Mar. 18	Mar. 25	Apr. 1
1950	88	89	92	95	92

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	95	94
1951	102	105	104										

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1951 the ratio is shown on the new basis of normal 6- and 7-day capacities. Corresponding weekly and monthly ratios for 1950 on the new basis, shown in the tables above, are somewhat lower.

Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

LIGHTNING DAMAGES CROSSETT

Crossett, Ark.—A bolt of lightning struck the Crossett Paper Mill plant March 29 searing and melting equipment, dazing three workers and damaging equipment, production and wages by an estimated $1 million. The plant is expected to be closed for six weeks or longer. The bolt hit a lead wire leading to the electric generating plant. A turbine was demolished, electrical switches and circuits and instrument panels were melted and steel beams in the roof warped from the blinding heat.

RYEGATE PAPER CO. SOLD

Ryegate Paper Co., East Ryegate, Vt., producers of groundwood printing papers, has been acquired by interests connected with White Mountain Paper Co., Inc., and Green Mountain Paper Co., Inc., both of Bellows Falls, Vt.

OBITUARIES

Guy A. Moffett, 50, recently appointed assistant manager of engineering of the General Electric Co.'s Control Divisions at Schenectady, N. Y., died March 27 after a short illness. He was a G-E employee for nearly 27 years.

Mr. Moffett joined the company as a student engineer on the Test Course in 1924, and was transferred to the Control's Divisions a year later as a proposition engineer. He was made a line engineer in 1928, and in 1939 became a section engineer.

Following various supervisory positions, he was named engineer of the division's Industry Division in 1948. Last July Mr. Moffett was appointed assistant to the manager of engineering for the Control Divisions and held that post until his recent appointment to assistant manager of engineering for the divisions.

He was a member of the American Institute of Electrical Engineers and the Assn. of Iron and Steel Engineers.

Frank Garfield Love, Sr., 70, president of the Hesse Envelope Co., Dallas, Texas, died March 20 in Alexandria, La., while on vacation. He joined the Hesse company in 1906, shortly after it was organized, as a salesman. After three years he became secretary of the company. He became president in 1938. Mr. Love was also a founder of the Gulf Envelope Co., Houston.

Charles E. Nelson, president and general manager of Mac Sim Bar Paper Co., Otsego, Mich., died April 1.

Mr. Nelson had been head of the Otsego firm since 1921. Before coming to Mac Sim Bar, he had been employed by the St. Mary's Paper Co., St. Mary's, Ohio, the McEwan Paper Co., Whippany, N. Y., and the Eddy Paper Co., Three Rivers.

Mr. Nelson was president of the National Paperboard Assn. in 1941, 1942, and 1943.

Edgar E. Morris, 56, works manager of Brown Co., Berlin, N. H., died suddenly on March 27 at the Maine General Hospital in Portland, Maine.

Beverley Bruce Maguire, 56, domestic sales manager of Provincial Paper Ltd., with which company he was associated for over 32 years, died in Toronto, Ont. He was a charter member of the company's Quarter Century Club. He is survived by his widow and two daughters.

Morris Nathan Wright, 64, president of the Continental-Diamond Fibre Co., died March 27 in Newark, Del.

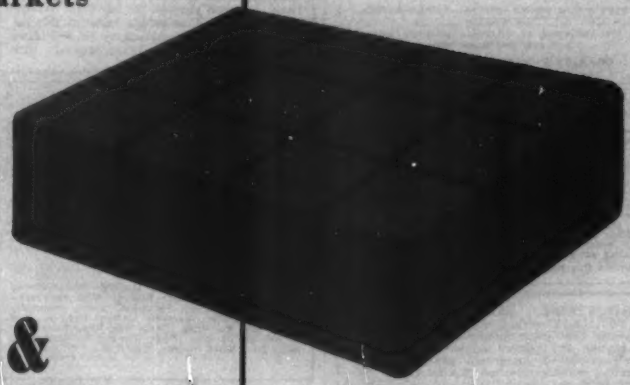
MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette Condenser | Wax Grease Proof | Photographic Snap-out Forms | Jet Propulsion Aero-engine Parts

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

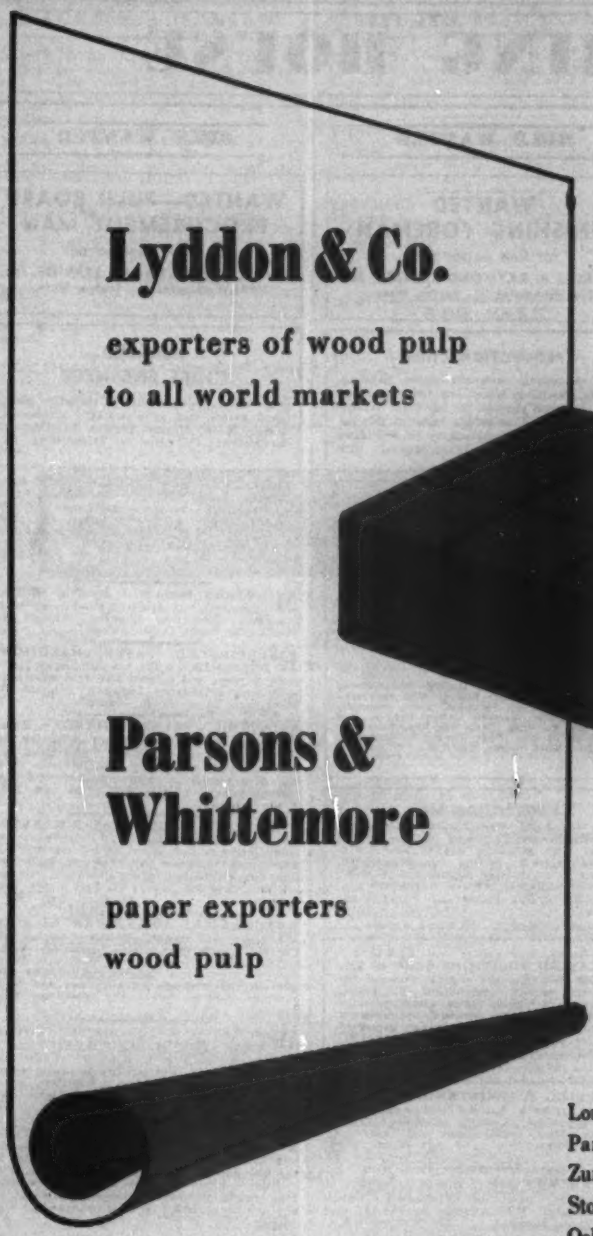
Lyddon & Co.

exporters of wood pulp
to all world markets



Parsons & Whittemore

paper exporters
wood pulp



London
Paris
Zurich
Stockholm
Oslo
Sousse
Montreal
Buenos Aires
Sao Paulo

10 East 40th Street, New York 16, N.Y.

CLEARING HOUSE

HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place—manager Fourdrinier coarse paper mill; supts. and foremen for converting depts.; asst. to vice pres.; well fitted inside sales work; supt. fine paper mill; production supt.; asst. supt. wet machine mill; bidding and paper converting executive; pulp board procurement man.

Finishing foremen fine papers; Cylinder and Fourdrinier machine foremen; salesmen and sales mgrs. for mechanical equipment, also paper salesmen; chemists, chemical engineers and laboratory men; master mechanics, plant engineers, mechanical engineers, designers and draftsmen, salary range $5,000-10,000 yr.; chief power engineer.

LIST YOUR CONFIDENTIAL APPLICATION WITH US
to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.

SPECIALISTS IN PLACING
PULP AND PAPER MILL EXECUTIVES
A-13

QUALITY CONTROL ENGINEER

Good opportunity for man experienced with mill operation to take charge quality control supervision in modern board mill specializing in high grade folding box board located in New York Metropolitan Area. System to eventually be integrated with folding box plant.

Address Box No. 51-180, Paper Trade Journal M-4

INDUSTRIAL PRODUCTION ANALYST, 28-35, with 5 or more years experience in time study, production control, wage incentive and related activities—wanted by well-established integrated paperboard converting manufacturer on Pacific Coast. Salary $400 per month. Insurance and retirement benefits available. In reply, send pertinent details to Personnel Manager, P.O. Box 3611, San Francisco 6, California. A-13

Wanted, by two-machine non-integrated Mill located in the Middle West, experienced Master Mechanic. In addition to trade knowledge must be cost and management-minded and possess the ability to handle those under him. In reply give complete resume of education, past experience, etc. Address Box 51-183, c/o Paper Trade Journal. A-13

SUPERINTENDENT or SEVERAL FOREMAN

10 years experience in semi- or fully automatic vacuum molding of paper pulp products. Will transport family to secured home. Salary commensurate with experience. Excellent business opportunity. State full details of experience, education and personal background and enclose recent snapshot. Confidential.

Address Box 51-182, care Paper Trade Journal. A-13

WANTED — TOP GRADE SALESMANAGER for an eastern chipboard mill. Fully experienced and capable. Furnish details of experience, capabilities and references. Excellent opportunity. Address Box 51-78 care Paper Trade Journal. TF

HELP WANTED

WANTED
FINISHING FOREMAN
for fine paper mill.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston, Mass.
A-13

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight producer executive. Our people know of this ad and full details confidentially to President, Box 80-443, care Paper Trade Journal. TF

WANTED
CHEMIST-ENGINEER

for permanent position in expanding technical sales department. Chicago location. Kraft pulp mill experience desirable. Write Box 51-166, Paper Trade Journal. A-20

HELP WANTED
MACHINE TENDERS

For 84" Fourdrinier Paper Making Manufacturing Light and Heavy Weight Papers. Must be Experienced in Waste Paper Furnishes. Living Accommodations Available. Excellent Rate of Pay. Six and Seven Days Per Week. State Age, Experience, Date of Availability, etc. Reply Thomas A. Galasso & Sons, Inc., North Hoosick, New York.
A-20

PRODUCTION MAN

Paper converting, nationally known, folding box manufacturer. Lifetime position for executive with following qualifications: Production engineer, folding box background, mechanical engineering degree, age 28 to 35, live in Philadelphia. Address full details confidentially to Box 51-164, c/o Paper Trade Journal. A-27

SALARIED POSITIONS $3,500 to $35,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards in individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC. —117 Dun Bldg., Buffalo, 2, N. Y. TF

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-87 care Paper Trade Journal. TF

YOUNG MAN with Southern experience to organize small personnel-safety section Southern Kraft Mill. Address Box 51-132 care Paper Trade Journal. A-13

HELP WANTED

WANTED—PULP BOARD PROCUREMENT MAN
for New England mill.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston, Mass.
A-13

WANTED
CHIEF ENGINEER

—to take complete charge of our power plant. Good salary and good working conditions. Contact R. E. Stearns, Empire Box Corp. of Stroudsburg, P.O. Box 54, Stroudsburg, Pa.
A-20

ASSISTANT SUPERINTENDENT. Established board mill has opening for experienced man as Assistant Superintendent. Permanent position with good salary and future advancement. Mid-western location. Applications treated confidentially. State experience and personal data. Address Box 51-173 care Paper Trade Journal. A-13

Mid-Western Fourdrinier Specialty Mill has opening for experienced Production Superintendent. References required. Address Box 51-171 care Paper Trade Journal. A-20

EXPERIENCED PAPER MACHINERY DESIGNER with special knowledge of reels, winders and cutters. Excellent opportunity with well established company. Address Box 51-49 care Paper Trade Journal. TF

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 51-86 care Paper Trade Journal. TF

GRADUATE MECHANICAL ENGINEER—With sufficient ability and experience in the manufacture of fine papers to be responsible for development program and to design, layout and supervise installation of equipment in midwestern mill. Address Box 51-151 care Paper Trade Journal. My-25

MECHANICAL DRAFTSMAN for general paper mill layout, machinery, piping, etc. Located in North Central Wisconsin. Would consider Mechanical Engineering graduate without experience. State qualifications and salary expected. Address Box 51-154 care Paper Trade Journal. A-20

WANTED — EXPERIENCED, COMPETENT PURCHASING AGENT for an eastern chipboard mill. Must be capable and fully experienced. Furnish details of experience, capabilities and references. Excellent opportunity. Address Box 51-153 care Paper Trade Journal. TF

PERSONNEL SERVICE ASSOCIATES, 115 State Street, Springfield, 3, Mass. Specialized Confidential Placement Service to the Paper and Allied Industries. Executive—Technical —Sales—General. Personnel. Correspondence from employers and employees welcome. Men and positions always available. Personnel Consultants. A-13

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.
If box number is used—75 cents additional.
Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 18, N. Y.

Beginning with the issue of May 4, 1951, minimum charge for Classified advertising will be $3.50 per issue.

SITUATIONS WANTED

PLANT MANAGER—Paper and Board and their conversion; wants challenging opportunity. Highly successful in organization; administration; labor relations and high level production. Presently employed. Address Box 51-63 care Paper Trade Journal. A-27

PAPER MILL ENGINEER—Plant Engineer with design experience sulphite pulp, cylinder and Fourdrinier specialties, desires connection. Address Box 51-121 care Paper Trade Journal. TF

SUPERINTENDENT—With long record as a Practical Paper Maker on modern high speed cylinder machines making Boxboard and Specialties. A Production Man. Address Box 51-155 care Paper Trade Journal. A-13

PLANT ENGINEER—Experienced Maintenance and engineering sulphite pulp and paper, desires opportunity with expanding concern. Address Box 51-163 care Paper Trade Journal. TF

SUPERINTENDENT—TOUR BOSS. Qualifications—Tissue Mill—all grades. Some board experience. Available at once. Address Box 51-179 care Paper Trade Journal. M-4

SITUATIONS WANTED

SALESMAN—Age 54. Moving to Chicago in October. Desires connection with fine paper jobber. Thirty years sales and mill experience. Address Box 54-181 care Paper Trade Journal. A-20

PERSONNEL MANAGER experienced in developing and supervising personnel department, including labor negotiations and labor relations. Address Box 51-172 care Paper Trade Journal. A-27

REFUGEE — Experienced in handling the processing of pulp, wrapping paper, cardboard, seeks employment in paper mill. Willing to start as assistant in any job regarding paper machines. Address Box 51-187 care Paper Trade Journal. A-13

FOR SALE

FOR SALE—LATEST PROCESS, proven equipment for the drinking and bleaching of 30 tons of waste paper, per day. Equipment immediately available. Address Box 51-184 care Paper Trade Journal. A-13

FOR SALE

FOR SALE

1—DeLaval steam turbine, Type 225 TCG, Rating 225 H.P., Speed 3700 RPM, initial pressure 140# psi, Exhaust pressure 35# psi.

1—DeLaval steam turbine, Type 325 TC-5, Rating 325 H.P., initial pressure 135# psi, Exhaust pressure 20# psi.

For further details, write:
Northern Paper Mills
Green Bay, Wisconsin A-20

FOR SALE

57 dandy rolls 10" dia. x 102" both trunnion and journal type. Can be recovered—$50.00 each.

Box 51-137, care Paper Trade Journal. A-13

MACHINERY WANTED FOR OUTRIGHT PURCHASE

Paper Machines, Paper Mill Machinery and Converting Equipment.

BEATERS
3—Dilts 750 lb. Iron Tub. Roll 44" face x 80" diameter.
1—Downingtown 1000 lb. Iron Tub. New roll 48" face x 40" diameter.

BELTING—NEW
67 feet 5" 10 ply Goodyear Rubber Belting.
150 feet 8" 4 ply Oliver Duck Transmission belt.

CALENDER ROLLS
46 Chilled Iron Rolls—Assorted sizes.

CALENDAR STACKS
1—3 roll—42".
1—3 roll—62".
1—Lowell 6 roll 124" Calender Stack, with doctors and drives.
1—Farrel Birmingham 110" Calender Stack with doctors, 2 roll bored for steam.

CONVEYOR
1—100± ft. long x 30" wide—with motor.

CORE CUTTERS
1—Cameron with 2" x 1¼" mandrels.

COUCH ROLLS—Rubber
1—110" face x 30" diameter. New.

CYLINDER MOLDS
1—134" face x 36" diameter, with stainless steel shafts.

DRIVES—ENCLOSED HERRING BONE GEAR
1—Falk right angle 75 hp—ratio 2.51-1.
1—Falk straight 150 hp—ratio 1.47-1.
1—Falk straight 150 hp—ratio 2.15-1.

DRYERS
2—132" face x 60" diameter.
1—60" face x 36" diameter.
1—77" face x 36" diameter—with gear.
1—120" face x 60" diameter—Baby Dryer.
28—130" face x 62" diameter.
1—60" face x 60" diameter.
1—100" face x 48" diameter, with bearings.
1—100" face x 48" diameter—with gears and bearings.
2—120" face x 62" diameter with bearings and gears.
1—72" face x 60" diameter.
1—60" face x 30" diameter.
1—100" face x 62" diameter Creping Dryer.
1—62" face x 30" diameter, with frames, gears and bearings.

EXTRACTOR ROLLS
1—Downingtown Extractor Roll 100" face x 30" diameter. Anti friction bearings.
1—Downingtown Extractor Roll 120" face x 30" diameter. Anti friction bearings.

FILTER PRESS
1—New Sperry filter press, size 12, type 41.

FILTERS
1—Oliver Vacuum Filters, Cylinder 10' face x 5'0" diameter. Steel vat. 1200 GPM capacity.

FLAT SCREENS
2—4 plate Sandy Hill Roller Shoe with screens.
1—Harwood 12 plate.
1—Sandy Hill 12 plate roller shoe.

JORDANS
1—20 Bliss, for motor drive.
1—Jones Majestic with base and couplings—#15 Stainless with base and coupling.
1—Jones Majestic Stainless Steel Plates.
1—E. D. Jones #1 high speed Jordan with base and coupling—Ball bearing.

PASTE LINING MACHINE
1—Downingtown 83", with 4 Dryers 48" diameter.

PULP EQUIPMENT
1—Mills & Morrill #17 Pulpwood chipper.
1—Bird ball bearing Pulp Screen. Practically new. Used 2 months.
4—IMPROVED Ball Bearing Pulp Screens—30 ton capacity.

PULPERS
3—#2 Lamoya.

PUMPS
44—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Goulds Pumps.

REDUCERS
1—Link Belt 40 H.p. Ratio 2.9-1. 300 r.p.m.-227 r.p.m.

ROLLS—PRESS, COUCH, etc.
10—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
200—Brass and steel carrying rolls.

ROTARY SCREENS
4—#2A Bird, fully rebuilt with new vats, plates, etc., motorized drive.
1—#2 Bird—stainless steel vat.
1—#2 Bird—Iron vat.

SAVEALLS
1—Oliver, Vacuum type, cylinder 120" face x 60" diameter, with steel vat.

SCREW PRESSES
1—Valley Voith Screw Press Size 2.

SHEETERS
1—48" Kidder Reel Sheeter.
1—60" Dupaco Slitter with 13 roll Rack Stand.

SHOWERS
3—Streeter Oscillating Showers for 120" machine.
1—Bird Shower.

SHREDDERS
1—American 27" Hammermill, anti-friction bearings.
1—Rietz Waldron Cutter—Type F-11—30" knives. Used 30 days.

SLITTERS AND WINDERS
1—Perry & Jones 100" high speed slitters and winders.
1—Kidder 120" Paper Machine Slitter and Winder—62" rewind.
1—Moore & White 120" Four Drum Paper Making Slitter and Winder—62" rewind.
1—Beloit 120" Paper Machine Slitter and Winder—62" rewind.
1—Cameron 62" Model 6, with motor.

STEAM TURBINES
1—De Laval 225 h.p. initial pressure 140 p.s.i. Exhaust pressure 30 p.s.i. Complete with gear reducer.
1—De Laval Variable speed—375 h.p. at 135 r.p.m. and 30 p.s.i. exhaust. Complete with gear reducer.

STOCK PUMPS
1—Beloit 10 x 30 Triplex with silent Link Belt Chain Drive.
1—Martin 10 x 24 Duplex.

STOCK REGULATORS
1—Merritt Stock Regulators.

SUCTION COUCH ROLLS
1—Millspaugh 32" diameter x 138½" suction lines.

SUCTION PRESS ROLLS
1—Millspaugh 131" drilled face x 23" diameter with stand & drive.

TRANSFORMER
1—General Electric outdoor 3000 KVA. 3 phase. 1200 to 480 volts.

WATER FINISH UNIT
1—Valley Mirrored Unit for water finish on paper—120" double.

WHY LIST YOUR EQUIPMENT? — WE WILL BUY IT.

FOR SALE

CAMERON SLITTERS

1—62" 26-3A Duplex
1—42" Universal Type 6.
1—62" Universal Type 6.
1—32" Type 40-2A.
1—42" Type 40-1-AF.

OTHER SLITTERS

1—50" Kidder Score Cut.
1—60" Hammerely.
1—45" Hudson-Sharpe. For Cutter Box and Shelf Papers.
1—30" Langston Type A Shear Cut Slitter and Rewinder.
1—42" Langston Center Wind Duplex Shear Cut Slitter and Rewinder.
1—30" Fales, Model B.

POWER PAPER CUTTERS

8—Seybold; 38", 54" and 64" 20th Century, 50" 16Z, 40" 4Z, 50" Dayton, 54" Holyoke.
3—Oswegos; 38", 44" and 57"; 1—Sheridan; 30"; 1—Dexter 57"; 2—Acme; 32" and 42"; 1—S&W Under Cut 63".

MISCELLANEOUS MACHINES

Several Die Presses, Seybold and Sheridan, various sizes.
Schultz Automatic Wax Paper cutter box roll machine Type AX-103, rewinds rolls up to 125" in length, 12" in width.
1—Potdevin Model 83 Sack Machine. 1 to 5 lb. range.
2—Lockport Flat and Square Bag Machines. One No. 2 and one No. 3.
1—32" Bagprint 3 color tailprinter for bag machine.
1—New 24"—2 color, Roll to Roll—Aniline Press.
1—International Paper Box Machine Co.'s Model 2P Hot Finish Paraffining Machine.
1—84" Miami lo-type Waxing Machine manufactured by Diltz Machine Works with 1 refrigerating unit size 4 x 4.
3—Potdevin Waxing Machines, one 80", one 82" and one 84" wide.
1—Paper Converting Machine Co.'s Model No. 215, three web, ¼ fold napkin machine with embossing attachment.
1—Paper Converting Machine Co. ¼ fold, 2 web napkin folder with embossing attachment, Extra embossing rolls.
1—81" Hudson Sharp Toilet Perforator.
2—Duplex Rotary Sheet Cutters—1—64" Dillon and 1—84" Moore & White.
1—42" Hobbs Embosser, with Vickers 20 ton hydraulic pressure attachment.
1—49" German Dornbusch Embossing machine with 2 sets of embossing rolls.
1—38" Holyoke Roll to Roll Embosser, Heavy Type. Two New Steel Rolls and One New Paper Roll.
1—45" Robinson Rotary Card Cutter.
1—40" Norwood Plater, AC Reversing Motor Equipment.
1—20" Champlain 4 color Rotogravure Press.
1—2-color 12x26 Kidder RFB&P Press, all attachments.
1—14" x 28" Meisel R.F.B.&P. Press, with all attachments for continuous register form printing.
1—60" Meisel 3 color 36" x 60" Roll to Sheet Adjustable Rotary Printing Press. Centered printing, to register, on sheets 20" to 36" in length by ¼".
1—40" 6-roll Holyoke Stack of super calenders 4 Metal; 2 Cotton, complete with drive.
1—48" Mayer Coating Machine Co.'s Gumming Machine for Kraft Paper.
2—Brightwood Automatic Box Machines. Several good used Mitts and Merrill, "Air Flue" paper shredders.

GIBBS-BROWER CO. INC.
Please Address Reply to Room 902
21 East 40th St., New York 16, N. Y.
Telephone Lexington 2-5759

A-13

FOR SALE | **FOR SALE**

REBUILT ELECTRICAL MACHINERY

AC MOTORS (3 ph. 60 cy.)

HP	Make	RPM	Spd.	Type
1200	G.E.	514	277	WT
1000	G.E.	514	277	WT
800	G.E.	514	277	WT
600	G.E.	514	277	WT
500	G.E.	514	277	WT
400	G.E.	514	277	WT
300	G.E.	514	277	WT
250	Wood.	514	277	I M
250	AL.Ch.	514	277	
250	G.E.	514	277	IK
200	G.E.	514	277	AT
150	Wood.	514	277	S Spd.
150	G.E.	514	277	CS
150	Wood.	514	277	
125	Wood.	514	277	
100	G.E.	514	277	I M
100	G.E.	514	277	AMX
100(4)	AL.Ch.	514	277	CS
100(4)	Wood.	514	277	CS
75	Wood.	514	277	CS
75	G.E.	514	277	IT1
75	Wood.	514	1725	CS
50	Wood.	514	1725	AK
50	AL.Ch.	514	900	AK
25	Wood.	514	1730 (Rec.)	CS40
25	G.E.	514	1150	I K
25	Vert. G.E.	514	1150	KT330
25	900 v. Wood.	514	1730	CS30
25	Gr.Wk.	514	1730	
25	Wood.	514	1730	CS

HP	Make	Volts	Spd.	Type
25	Wood.	D.C.	1200	CS
25	Al. Ch. (new)	230/460 V.	3500 (60-1-1750)	3-3
20	Wood.	550	900	3-3
15	Wood.	D.C.	1750	CS40
10	Wood.	D.C.	1750	CS40
10	Wood.	D.C.	575	CS40
10(5)	AL.Ch.	D.C.	575	ART
10	Wood.	D.C.	1750	CS40
7½(3)	AL.Ch.	D.C.	575	ART
7½	G.E.	D.C.	1200	KT
7½	Wood.	D.C.	1750	CS40
7½	Wood.	D.C.	2400	CS40
5	Wood.	D.C.	1800	CS
3	Wood.	D.C.	1750	CS
2/1½	L.A.	D.C.	900/1800	2WS
1	Reiner	D.C.	1150/27	FA
1	Burke	D.C.	450	EM2
1	Wood.	D.C.	1750	
3	550v. Wood.	D.C.	1750	CS234

TRANSFORMERS

KVA	MAKE	PRI.	SEC.
1—2000 (3 PH)	G.E.	2300	230
1—2000	Wood.	2300	230
1—750	AL.Ch.	2300	230
1—150	G.E.	2400	120/240
1—100	G.E.	2400	120/240
1—25	Wood.	2400	120/240

MOORHEAD ELECTRICAL MACHINERY CO.
OAKDALE, PA., Pittsburgh District — Pittsburgh Tele. WAlnut 1-4300 — A-13

---

500 TONS per month UNBLEACHED SULPHATE SCREENINGS

$60.00 per ton Air dry basis
F.O.B. Montreal
Box 51-175 care Paper Trade Journal.

A-13

FOR SALE

2—MODEL 2 LANNOYE PULPERS — WITH ENCLOSED DRIVES, LESS MOTORS—IN GOOD OPERATING CONDITION.

Price $5,700. f.o.b. WORCESTER, MASS.
Address Box 51-168, care Paper Trade Journal.

A-13

FOR SALE— **Immediate Delivery**

1—102" HAMBLET PAPER SHEETER—

With MOORE & WHITE 3-STACK LAYBOY—COMPLETE NEW BUSHINGS—
Now can be seen in operation
ADDRESS BOX 51-177, PAPER TRADE JOURNAL

A-27

FOR SALE

#4 Fischer Automatic Flat & Square Bag Machine with 2 color pre-print aniline press. Range 4⅛ x 11½ to 11⅛ x 18.

#5 Fischer Automatic Flat & Square Bag Machine with 1 color oil printer. Range 6½ x 13½ to 13⅝ x 18.

Champion W.D. 41-Smithe Open End, C.O. Roll Feed Machine, 2 color oil printer. Range 4 x 7½ to 9 x 10.

Champion W.D. 52-Smithe Open End C.O. Roll Feed Machine, 2 color oil printer. Range 4 x 6 to 9 x 10.

Hensel & Co. Bag machine with 2 color Potdevin oil printer. Range 2 x 2¼ to 6½ x 7¼. Open End, Side Seam. Suitable for Glassine or regular paper.

Preprint machine complete with 2 color Hudson Sharp aniline press (20" printing width), Automatic web guide, Unwind and Rewind, Drying Arch, 3 H.P. motor.

C 154 Plunger—will make 4½ x 9½ and Monarch 3⅝ x 7½

C 638 Plunger—will make 3⅝ x 8½ and 4½ x 9½

B 1021 Plunger—will make 3⅛ x 6½; 3⅜ x 6¾ and 3⅝ x 8½

Preprint and Plungers in good operating condition. All machines are reasonably priced. For further information or retails write Box No. 51-182 c/o Paper Trade Journal.

A-13

FOR SALE

Motor drives stack directly connected by Waldron flexible coupling with herringbone gear reduction drive & Kohler system electric hookup.

9 roll stack (Holyoke) 58" wide.

1 bottom steel roll 18" dia. with 10" journal.

3 intermediate steel rolls 12" dia. with 6" journals.

3 cotton rolls—14" dia.

1 paper roll—14" dia.

1 steel top roll 16" dia.

Water cooled bearings.

Web frame 17" between guides so intermediate rolls can be removed through sides.

Compound levers and weights.

2 shaft hand revolving rewinder to take 50" dia. roll. Drive consists of D.C. Diehl 75 H.P. Motor 230 V with Cutler Hammer, magnetic clutch and Kohler system for variable speed.

Address Box 51-183 care Paper Trade Journal J-8

FOR SALE

1—15 KW 1180 RPM M. G. Set	
1—75 HP 400 RPM Motor	
1—37½ HP 885 RPM Motor	
1—30 HP 1155 RPM Motor	
1—30 HP 1750 RPM Motor	
1—20 HP 1160 RPM Motor	
1—10 HP 1165 RPM Motor	
1—75 HP 900 RPM Motor	
1—25 HP 1735 RPM Motor	
1—10 HP 1750 RPM Motor	
1—75 HP 600 RPM Motor	
1—60 HP 600 RPM Motor	
1—50 HP 1200 RPM Motor	
1—25 HP 1200 RPM Motor	
1—20 HP 900 RPM Motor	
1—15 KW DC Generator	
1—9A Bird Sawall	

Londonderry Paper Mill, Inc.
Lansdowne, Pa. A-13

FOR SALE—Seventy inch trim board machine consisting of duplex cylinder wet end with two Kamyr presses and 8 driers sixty inch diameter and sixteen driers thirty six inch diameter and cut off knife. Back drives included. May be seen running. Address Box 51-174 care Paper Trade Journal. A-20

FOR SALE—52" Cameron #8 Model 5 Slitter and Rewinder. A good heavy duty machine, reasonably priced f.o.b. shipping point Middle West. Address Box 51-169 care Paper Trade Journal. A-20

FOR SALE

AVAILABLE NOW—BRAND NEW

1 20" Flow Nozzle with spring driven pedestal mounted nozzles and accessories m/g. by Builders Providence, Inc.

1 No. 2 Omega Universal Feeder, 0-80 pounds water works alum per hour, 500 pound Hopper capacity.

1 9' dia. x 9' deep ¼" steel mixing tank with H.P. "Lightnin" mixer.

1 Leeds & Northrup "Micromax" PH Control cubicle for regulating feed of alkaline solution to maintain PH6.8 to 7.0.

1 No. 4 Dorr Co., suction sludge pump.

1 50' dia. x 9' BWD Dorr "Clarifloculator" mechanism with 20' Dia. x 7'9" BWD center drive skills, weir plates, etc.

Above equipment purchased for industrial waste recovery plant—due to process changes these items are not now required. Equipment never used and now stored in original packings. Available for inspection by prospective purchasers—Location Baltimore.

Address Box 51-176 care Paper Trade Journal. A-13

GOOD VALUES FOR THE PAPER MILL

42" Moore & White Sheeter, with or without layboy.
45" Beck Sheeter, almost new.
58" Finlay Sheeter.
100" Dillon single-knife Sheeter with 4 sets Slitters & 10-roll Back-Stand.
102" Hamblet Sheeter with M & W Layboy.
68" Oswego mill type Power Cutter.
94" Seybold 20th Century Pwr. Cutter.
Morrison model 32 L.G. Corrugated Box Stitcher.
36" Acme Auto Power Cutter.
Balers—both new and used.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.)
TF

PAPER MILL SITE FOR SALE

Centrally located site of about four acres for sale. Water and rail shipping facilities. Frontage on main highway. Low power and water rates, excellent labor market. Within radius of one mile are two mills producing market Groundwood and two mills producing market Sulphite.

Box 535, Thorold, Ontario
A-13

FOR SALE

FOR SALE

One #1-A Bird Screen Good condition. Box No. 51-186, care Paper Trade Journal.
A-13

FOR SALE
1—Pusey & Jones Fourdrinier part.
150" wire 50" long.
43 rubber covered cable rolls.
Anti friction bearings.
Suction Couch 22" diameter.
Breast Roll 20" diameter.
6 Brass Suction Boxes
Voith inlet.
ROSS PAPER MACHINERY COMPANY
208 Passaic Street Newark, N. J.
Tel. HUmboldt 2-2177
A-13

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR IMMEDIATE SALE — 2 Standard Steam Turbine Centrifugal Type Auxiliary Fire Pumps, size 6 C.S., Serial 7394 and 7395, 2300 RPM, 231' head, 80 lb. steam pressure developing 750 GPM. Price $250.00 each, f.o.b., East Rochester. Address inquiries Despatch Shops, Inc., East Rochester, N. Y. A-13

FOR SALE—74" Knowlton Traveling Shear Cut-off Knife.—Bargain. Address Box 51-105 care Paper Trade Journal. TF

WANTED

WANTED—W & P Shredders, Evaporators Generators and Boilers, Slitters, Cutters Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-89 care Paper Trade Journal. TF

WANTED

Serviceable Grocery Bag Machine 8 through 20 lb. sizes. Recent Model Potdevin preferred.
Address Box 50-458, care Paper Trade Journal. TF

WANTED

4—36" diameter x 73" Face Dryers
4—28" diameter x 66" Face Dryers
American Paper Products Company
15 Lane Street, Waltham 54, Mass.
A-27

WANTED

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-88 care Paper Trade Journal. TF

WANTED—One 60" Knife Baring, also one 50"-70" Chipper. Address Box 51-152 care Paper Trade Journal. A-13

WANTED—60" to 72" Hamblet Sheeter with layboy, for Defense Work. Other makes considered. Address Box 51-157 care Paper Trade Journal. A-13

WANTED—Used constant-speed rewinder 50" to 60" wide, with or without drive. Address Box 51-159 care Paper Trade Journal. A-20

PAPER MILL WILL TAKE ORDERS for paper from 10 lbs. basis weight to 30 lbs. basis weight. We solicit your inquiry. Address Box 51-158 care Paper Trade Journal. A-13

WANTED—Paper Machine or Paper Mill suitable for .009. Address Box 51-165 care Paper Trade Journal. A-13

MACHINERY WANTED—Paper tube winding machine, cut-off, capping equipment, etc., entire outfit or individual units; must be in good working order. Send offering with prices and complete description. Address Box 51-111 care Paper Trade Journal. A-13

PAPER SHEETER WANTED—Paper Jobber would like to purchase a paper sheeter in good condition and at a fair price. Please give full and complete information when replying. Address Box 51-170 care Paper Trade Journal. A-13

WANTED—Small Power Driven used Baler. State make, outside dimensions of baler, bale size and price. Address Box 51-178 care Paper Trade Journal. A-13

YOU CAN DISPOSE OF ANY AND ALL THAT SURPLUS EQUIPMENT through a Classified advertisement in the CLEARING HOUSE of PAPER TRADE JOURNAL Try it!

LONG ON EVERYTHING YOU REQUIRE OF CENTRIFUGAL CASTINGS!

Long in quality, and long on required physical properties, Sandusky Castings have provided satisfaction for more than forty years.

Always specify CHIEF SANDUSKY to your machine builder, and you will have the best in centrifugal castings . . . uniform, dense, and free from porosity.

• CHIEF SANDUSKY CENTRIFUGAL CASTINGS • SANDUSKY, OHIO
SANDUSKY FOUNDRY AND MACHINE CO.

for

UNIFORMITY

APPLETON FELTS

Appleton Woolen Mills

APPLETON WISCONSIN

WHERE TO BUY

ABRASIVES
Monsanto Chemical Co
Nanestuck Chemical Division of U. S. Rubber Co.
Norton Co.

ADHESIVES
American Cyanamid Company Plastics & Resins Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
Morningstar, Nichol, Inc.
National Starch Products, Inc.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Stein, Hall & Co., Inc.

AGITATORS
American Paper Machy. & Engrg. Works, Inc.
Appleton Machine Co.
The Cowles Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

ADJUSTABLE SHAKE MOTION
Manchester Machine Co.

ADJUSTABLE TILTING MOTOR BASE
Lovejoy Flexible Coupling Co.

ALLOYS
Michigan Steel Casting Co.

ANTIFOAM
American Cyanamid Company Industrial Chemicals Division
National Aluminate Corp.
Nopco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Ferrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
Goodrich, B. F., Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BIN DISCHARGERS
Hofft Company, Inc.
Stephens-Adamson Mfg. Co.

BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.
Combustion Engineering-Superheater, Inc.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

BRUSH ROLLS
M. W. Jenkins Sons, Inc.

BRUSHES
M. W. Jenkins Sons, Inc.
Geo Reidel & Son
The Sandy Hill Iron & Brass Works
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

BALL MILLS
F. L. Smidth & Co.

BARK BURNER
Combustion Engineering-Superheater, Inc.
Hofft Company, Inc.
Nichols Engrg. & Research Corp.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

BEARINGS
The Bagley & Sewall Company
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
SKF Industries
Stephens-Adamson Mfg. Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BURSTING TESTERS
B. F. Perkins & Son, Inc.
Tinius Olsen Testing Machines, Inc.

CALENDERS
The Bagley & Sewall Company
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Wahlstrom Corp., John

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co.
Industrial Chem. Div.
Bauge Pulp & Paper Co.
Hercules Powder Co.

CASTINGS
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Lobdell United Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Stephens-Adamson Mfg. Co.

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS
American Cyanamid Co., Industrial Chems. Div.
Ansul Chemical Co.
Bunge Pulp & Paper Co.
Calco Chemical Co.
Calgon, Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gotteman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Napco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Napco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Pendevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Napco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COILS
The N. P. Bowsher Co.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS
C. M. Guest & Sons

CONSULTING ENGINEERS
Birt, F. Post
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Brown Instrument Co.
Johnson Corp.
Foxboro Control Co.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works
Hudson-Sharp Machine Co.

CONVEYORS
Black Clawson Company
Industrial Brownhoist Corp.
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

CORES
Klixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Railway Supply & Mfg. Co.

COUPLINGS
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
The Bagley & Sewall Company
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass
Taylor, Stiles & Co. Works
The Smith & Winchester Mfg. Co.

CYLINDER MOULDS
Manchester Machine Co.

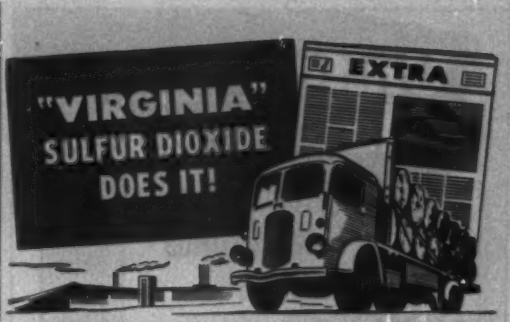
CYLINDERS
M. W. Jenkins Sons, Inc.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEEDING
Williams-Gray Co.

DEFIBERATORS
American Defibrator Co.

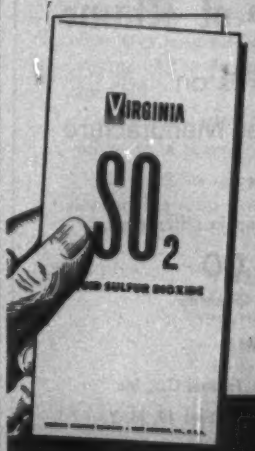
DE-INKING
The Cowles Company
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.



More Profitable Paper Products

Sulfur dioxide (SO_2) is a "must" in the production of whiter, brighter pulp or paper. You need the competitive advantages imparted by "Virginia" Liquid Sulfur Dioxide . . . the general upgrading of quality, the several additional points of brightness.

"Virginia" Liquid Sulfur Dioxide adjusts the pH and acts as a reducing agent, decolorizer, and antichlor. Whiteness is improved and color reversion retarded. Equipment maintenance costs are cut. In this effective application of its SO_2 to paper and pulp making, "Virginia" scores one of its greatest successes in 29 years of service to more than 40 industries.



If you operate a mill using groundwood pulp or sulfite pulp, or one turning out bleached or semi-bleached kraft, your products will be better, more salable—command higher prices—if you use "Virginia" Liquid SO_2 in your processes. Send today for our descriptive folder on sulfur dioxide. VIRGINIA SMELTING COMPANY, West Norfolk 3, Virginia.

Sales Offices
NEW YORK
BOSTON
DETROIT
CHICAGO
PHILADELPHIA
ATLANTA

VIRGINIA Chemicals

United
Blacks
DIXIE • KOMOS
PARIS BLACKS
Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.
Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.
UNITED CARBON COMPANY, INC.
CHARLESTON, WEST VIRGINIA
NEW YORK • AKRON • CHICAGO • BOSTON
AND OTHER PRINCIPAL CITIES
CANADA: CANADIAN INDUSTRIES, LIMITED

IN BOOK FORM—

University of Maine

Lectures on
Pulp and Paper Manufacture

▼

Beautifully bound in stiff cover.

$5.00

Limited Quantity

▲

Lockwood Trade Journal Co., Inc.
15 W. 47th St., New York 19, N. Y.

The final touch to fine machinery

THE JOHNSON
Rotary Pressure **JOINT**

Johnson Corporation
828 Wood St., Three Rivers, Michigan.

- Completely Packless
- Self Oiling
- Self Adjusting
- Will absorb both lateral and angular misalignment

DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Pusey & Jones Corp.

DIGESTERS (Continuous)
Paper & Industrial Appliances

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Ludding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Ludding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

DRIERS
The Bagley & Sewall Company
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
The Bagley & Sewall Company
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs Brower Company, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hoffl Company, Inc.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Sons, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Egan, Frank W., & Co.
Lovejoy Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Clark Equipment Company Industrial Truck Division
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FORMING MACHINES
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

FRIENESS TESTERS
Testing Machines, Inc
Williams Apparatus Co.

FURNACES
Hoffl Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lakdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES
The Bagley & Sewall Company
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
John Waldron Corp.

GUMMING MACHINES
Ditts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Ditts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company Industrial Truck Division
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Beckman Instruments, Inc.
Brown Instrument Co.
Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Johnson Corp.
Lovejoy Flexible Coupling Co.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Ditts Machine Works, Inc.
Hamblet Machine Co.
Hepenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Simons Werden White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Beckman Instruments, Inc.
Bird Machine Company
Ditts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Ditts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

LAY BOYS
Ditts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LIFT TRUCKS
Clark Equipment Company Industrial Truck Division

LINTER COTTON
Railway Supply & Mfg. Co.

LUBRICANTS
Gulf Refining Co.
Sinclair Refining Co.

PRODUCTION PROBLEMS got you up a creek?

● The function of our Technical Sales Staff is to help solve various production problems in the field. These men are constantly working with new products and techniques—perhaps this experience would be helpful in smoothing out production sore spots in your operation.

Our basic, continuing research in starch chemistry is unsurpassed . . . under the direction of the foremost research men in this field.

Make the most of these facilities . . . no obligation of course.

For uniform quality products . . . for a dependable source of supply . . . depend on Corn Products Refining Company.

GLOBE
Starch for the beaters and for enzyme conversion;

AMIJEL
for the beaters;

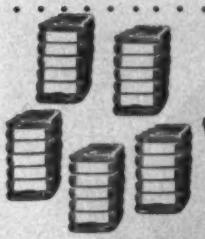
CORAGUM
for corrugating; and

LAM-O-DEX
for laminating.

Write to

CORN PRODUCTS REFINING CO.
17 Battery Place • New York 4, N. Y.

Globe, Amijel, Coragum and Lam-o-dex are registered trade-marks of Corn Products Refining Company, New York, N.Y.



they LOOK alike
they FEEL alike
BUT...

RAILWAY PAPER-RATING TESTS SAY NO!

Only Certain Bales of COTTON LINTERS are Suitable to "Cotton Content Paper"

Our Graders and Technicians, thru Tests and Controls insure that

PAPER-RATED COTTON LINTERS

will meet your requirements; give you Cleanliness and Quality of Raw Stock, Economy and Efficiency in production.

THE RAILWAY SUPPLY & MFG. CO.

General Office: CINCINNATI, OHIO

PAPER MILL AND PLASTICS DIVISION

WESTERN SALES
RAILWAY SUPPLY & MFG. CO.
10-100 Merchandise Mart
Chicago, Illinois

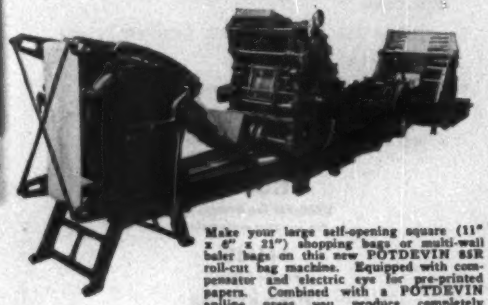
EASTERN SALES
JAMES T. FLANNERY CO.
26 Journal Square
Jersey City, N. J.

OTHER BRANCHES: ATLANTA, MEMPHIS, CHARLOTTE, NEW YORK, DALLAS, PHILADELPHIA, LOS ANGELES

High Speed, Low Cost Production with the new

POTDEVIN

SELF-OPENING SQUARE SHOPPING AND BALER BAG MACHINE



Make your large self-opening square (11" x 6" x 21") shopping bags or multi-wall baler bags on this new POTDEVIN 85R roll-cut bag machine. Equipped with compensator and electric eye for pre-printed papers. Combined with a POTDEVIN anilline press you produce completely printed bags in one operation. Can be equipped with hole punching and scoring for string handles. Available with either upright or inverted former for silt-proof bags.

POTDEVIN MACHINE CO.
1223 38th Street, Brooklyn 18, N. Y.

Designers and manufacturers since 1893 of equipment for Bag Making, Printing, Coating, Gluing and Labeling

POTDEVIN

Saxony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Clark Equipment Company Industrial Truck Division
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Labdell Co.
Stephens-Adamson Mfg. Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Bareco Oil Co.
Bunge Pulp & Paper Co.
Moore & Munger
Sun Oil Company

MOISTURE CONTENT CONTROL
Cambridge Instrument Co.
Strickle Steam Specialties Co.
Williams Apparatus Co., Inc.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Bunge Pulp & Paper Co.
Canadian Newsprint Supply Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.
Clark Equipment Company Industrial Truck Division

PALLET TRUCKS
Clark Equipment Company Industrial Truck Division

PAPER MACHINE DRIVES
The Bagley & Sewall Company
Manchester Machine Co.

PAPER MACHINES
The Bagley & Sewall Company
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lakenweld
Moore & White Co.
Posey & Jones Corp.
J. J. Rose Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

PARAFFINE WAXES
Moore & Munger
Sun Oil Company

PARAFFIN WAX EMULSIONS
Nopco Chemical Co.

PASTING MACHINES
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

pH METERS
Cambridge Instrument Co.
Thwing-Albert Instrument Co.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., H. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Egan, Frank W., & Co.
Manchester Machine Co.

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESSURE VESSELS
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULLEYS
Lovejoy Flexible Coupling Co.

PULP CLASSIFIER
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP CLEANERS
Nichols Engrg. & Research Corp.

PULP STOCK VALVES
Crane Company
Record Pdy. & Mach. Co.
Shartle Brothers Machine Co.

PULPERS
Agnew, Inc.
Bauer Brothers Co.
The Cowles Company
Dilts Machine Works
E. D. Jones & Sons Co.
Morden Machines Co.
Shartle Brothers Machine Co.

PULPS
Brown Company
Bunge Pulp & Paper Co.
Gotteszman & Co., Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Restigouche Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Paper and Pulp Testing Laboratories
Williams Apparatus Co., Inc.

PULVERIZING MILLS
Combustion Engineering-Superheater, Inc.
F. L. Smidth & Co.

PUMPS
American Paper Machy. & Repts Works, Inc.
Allis-Chalmers Mfg. Co.
The Bagley & Sewall Company
Black Clawson Company
Buffalo Pumps, Inc.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Byron Jackson Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Nonts Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS
The Dorr Company

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
The Cowles Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout Waldron & Co., Inc.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
APMEW, Inc.
Allis-Chalmers Mfg. Co.
Bird Machine Company
General Electric Co.
Johnson Corp.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies

RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Pittsburgh Plate Glass Co. Libbey-Owens-Ford Glass Co.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Pettebone Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works

ROTARY KILNS
F. L. Smidth & Co.

ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Shartle Bros. Mch. Co.

RUBBER PRODUCTS
The Goodyear Tire & Rubber Company

SATURANTS
B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pettebone Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.

SCALES
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
Carthage Machine Co.
The Cowles Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.

BACK IN THE BUSTLE ERA

When ladies wore bustles
In grandfather's day
They bulged back and front
In a marvellous way.

And grandpa drove horses
With dapple gray pelts
And blanketed them
With disused Draper Felts.

Way back in the nineties
The smart papermaker
Was already using
Those felts made by Draper!

The DRAPER Felt

DRAPER BROTHERS COMPANY
Woolen Manufacturers Since 1856
CANTON, MASSACHUSETTS

WEST VIRGINIA PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

Lincoln-Liberty Bldg.
Philadelphia 7, Pa.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED
ENGLISH FINISH
LITHOGRAPH
LABEL
OFFSET
EGGSHELL
MUSIC
POSTER
BOND
WRITING

ENVELOPE
MIMEOGRAPH
INDEX BRISTOL
POST CARD
COVER
CUP AND CONTAINER
FILE FOLDER
TAG
COATED
MACHINE COATED

KRAFT LINER BOARD
KRAFT CONVERTING AND KRAFT ENVELOPE

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

PRICE & PIERCE LTD.

Wood Pulp and Paper Agents

60 E 42 ST. N.Y. 17

SHEET MACHINES
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Valley Iron Works Co.
Williams Apparatus Co., Inc.

SHEETERS
Jagenberg-Werke Akt. Ges.

SHOWER PIPES
Bird Machine Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZE PRESSES
Manchester Machine Co.

SIZING
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Stein-Hall Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

SLIME CONTROL
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
The Bagley & Sewall Company
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SPECIAL MACHINERY
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.

SPLICING TISSUE
Bunge Pulp & Paper Co.
Williams-Gray Co.

STAINLESS STEEL
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

STARCH
A. M. Meincke & Son, Inc.
Chemo Foods, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS
The Moore & White Co.
Shartle Bros. Mch. Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Johnson Corp.
Stickle Steam Specialties Co.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

STRETCH TESTER
Thwing-Albert Instrument Co.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SULPHITE SPECIALTIES
Canadian Newsprint Supply Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SULPHUR DIOXIDE
American Cyanamid Company, Calco Chemical Div.
Ansul Chemical Co.
Virginia Smelting Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
B. F. Perkins & Sons, Inc.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

TEARING TESTERS
Thwing-Albert Instrument Co.
Testing Machines, Inc.

TENSILE TESTERS
Bunge Pulp & Paper Co.
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
Nopco Chemical Co.

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Downingtown Mfg. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TOOLS
Walworth Company

TRACTORS AND TRUCKS
Clark Equip. Co. of Industrial Truck Div.
Townsend Corp.

TRANSMISSIONS
Dodge Mfg. Corp.
Link Belt Company
Lovejoy Flexible Coupling Co.
Stephens-Adamson Mfg. Co.

TRAPS
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

TUBE MILLS
F. L. Smidth & Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works

TUBING, MECHANICAL
National Tube Co.

TUBS
Shartle Brothers Machine Co.
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company

UNWINDERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
John Waldron Corp.

USED EQUIPMENT
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.

V-BELTS
Lovejoy Flexible Coupling Co.

VALVES
The Bagley & Sewall Company
Crane Company
Dilts Machine Works
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Walworth Company

WASHERS
The Bagley & Sewall Company
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING, EQUIPMENT
Hungerford & Terry, Inc.

WATER CONDITIONING
Calgon, Inc.
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Brass Works

WATER DISPERSIONS
American Cyanamid Company Industrial Chemicals Division
Naugatuck Chemical Division of U. S. Rubber Co.
Rohm & Haas Co., Resinous Products Div

WATER FINISH EQUIPMENT
Dilts Machine Works

WATER PENETRATION TESTER
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

WATER SOFTENERS
The Dorr Company
Hungerford & Terry, Inc.
The Permutit Company
Wyandotte Chemicals Corp., Michigan Alkali Div.

WATER VAPOR CUPS
Thwing-Albert Instrument Co

WAXES
Bunge Pulp & Paper Co.

WAXING MACHINERY
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Hermon G.

WEB TENSION CONTROL
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
John Waldron Corp.

WELDING EQUIPMENT
General Electric Company
Walworth Company

WET MACHINES
The Bagley & Sewall Company
Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co
Valley Iron Works Co.

WETTING AGENTS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

WHITE WATER TREATING EQUIPT.
Hungerford & Terry, Inc.
The Permutit Company
The Sandy Hill Iron & Brass Works

WINDERS & REWINDERS
The Bagley & Sewall Company
The Appleton Machine Co.
Black Clawson Company
Kohler Systems
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.

WIRE BRUSHES
M. W. Jenkins Sons, Inc.
Williams-Gray Co.

WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

WOOD CHIP ELEVATORS
Stephens-Adamson Mfg. Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.
The Permutit Company

Semichemical chips defibered by 5 Bauer Pulp Refiners

The above reproduction fails to do justice to one of the most spectacular commercial photographs we have ever seen. It was taken by Lefebvre-Luebke at the new mill of Green Bay Paper & Pulp Company, and is published by us with permission.

Here are five Bauer Pulp Refiners arranged in lines of three and two machines respectively. Semichemical chips are fed to the refiners through chutes. Each chute is equipped with a Bauer Permanent Magnetic Separator for removing tramp iron. Water is added to the chips by showers in the chutes to effect the desired consistency for fiberizing. Subsequent showers are used for further diluting the pulp.

This is an example of the hundreds of Bauer Pulp Refiners in operation throughout the world for pulp and stock processing. The materials treated include raw, steamed, extracted, or semichemically cooked chips; many types of screen rejects; raw pulp, old paper, straw, and numerous kinds of fibrous residues.

For complete information, read our bulletin No. P-1. A copy will be gladly sent upon request. Write, wire, or phone us.

Bauer

THE BAUER BROS. CO.

1758 Sheridan Ave. • Springfield, Ohio

INDEX TO ADVERTISERS

A

Adams, R. P., Co. — —
Allis-Chalmers Mfg. Co. — 3
Amercoat Corp. — 44
American Cyanamid Co., Calco Chemicals Div. — —
American Cyanamid Co., Industrial Chemicals Div. — —
American Leather Belting Assn. — —
American Steel & Wire Co. — —
Ansul Chemical Co. — —
Apmew, Inc. — —
Appleton Machine Co., The — —
Appleton Wire Works, Inc. — —
Appleton Woolen Mills — 60
Armco Drainage & Metal Products — —
Armco Steel Corp. — —
Asten-Hill Mfg. Co. — 48

B

Babcock & Wilcox Co. — —
Bagley & Sewall Co. — 29
Bahr Bros. Mfg. Co. — —
Bailey Meter Co. — —
Bareco Oil Co. — 47
Bauer Bros. Co. — 67
Bird Machine Co. — —
Birk, F. Paul — —
Bixby, R. W., Inc. — 56
Black Clawson Co. — 6
Blaw-Knox Co. — —
Bowsher, N. P., Co. — —
Brown Co. — —
Brown Instrument Div., Minneapolis-Honeywell Reg. Co. — —
Bulkley, Dunton Pulp Co. — —
Byron Jackson Co. — —

C

Cambridge Instrument Co. — —
Cameron Machine Co. — —
Canadian Newsprint Supply Co. — —
Carnegie-Illinois Steel Corp. — 13
Carthage Machine Co. — 42
Chemipulp Process, Inc. — —
Chicago Bridge & Iron Co. — —
Ciba Co. — —
Clark-Aiken Co. — 19
Clark Equipment Co. — 46
Classified Advertising — 56
Cleveland Crane & Engrg. Co. — —
Clinton Foods, Inc. — —
Columbia Steel Co. — —
Combustion Engineering-Superheater, Inc. — 23
Corn Products Sales Co. — 63
Crane Co. — —
Crucible Steel Corp. of America — 10

D

Deitz Machine Works — —
De Laval Steam Turbine Co. — —
Diamond Alkali Co. — —
Dilts Machine Works — 6
Dodge Manfg. Corp. — —
Dow Chemical Co. — —
Downingtown Mfg. Co. — 27
Dracco Corp. — —
Draper Brothers Co. — 65
du Pont, E. I., de Nemours & Co. Electrochemicals Dept. — —
du Pont, E. I., de Nemours & Co. Dyestuffs Dept. — —
du Pont, E. I., de Nemours & Co. Grasselli Chem. Dept. — —
du Pont, E. I., de Nemours & Co. Polychemicals Dept. — —
Duriron Co., The — —

E

Ebasco Services, Inc. — —
Egan, Frank, & Co. — —
Elixman Paper Core Co. — —
Elwell Parker Elec. Co. — —
English China Clays Sales Corp. — —

F

Fairbanks, Morse & Co. — —
Farrel-Birmingham Co., Inc. — —
Ferguson, The H. K., Co. — 42
Fitchburg Screen Plate Co. — —

G

Gergy Co. — 48
General Dyestuff Corp. — —
General Electric Co. — 38 & 39
Gibbs-Brower Co. — 58
Ghidden Co. — —
Goodrich Co., B. F. — —
Goodrich Chemical Co. — —
Goodyear Tire & Rubber Co. — Back Cover
Goslin-Birmingham Mfg. Co. — —
Gotham Ink & Color Co. — —
Gottesman & Co. — —
Graphic Arts Int. Corp. — 51
Grinnell Co., Inc. — —
Gulf Oil Corp. — —
Gurley, W. & L. E. — —

H

Hagan Corp. (Calgon, Inc.) — 41
Hall, Thomas W., Co. — 59
Hamblet Machine Co. — —
Harris-Seybold Co. — —
Heppenstall Co. — 33
Hercules Powder Co. — —
Heyden Chemical Co., Aktivin Div. — 25
Hoffl Co., Inc. — —
Hooker Electrochemical Co. — —
Huber, J. M., Corp. — —
Hubinger Co., The — —
Hungerford & Terry, Inc. — —
Huyck, F. C., & Sons — 2

I

International Nickel Co. — —
International Wire Works — 40

J

Jenkins, M. W., Sons, Inc. — —
Johnson Corp., The — 62
Johnson, Alvin H., & Co. — —
Jones, E. D. & Sons Co. — —

K

Kalamazoo Tank & Silo Co. — —
Kidder, Peabody & Co. — —
Kinsley Chemical Co. — 48
Knox Woolen Co. — —
Koppers Co., Inc. — —

L

Langston, Samuel M., Co. — —
Lawton, C. A., Co. — —
Lindsay Wire Weaving Co. — —
Lockport Felt Co. — —
Lodding Engineering Co. — —
Lovejoy Flexible Coupling Co. — 50
Lukens Steel Co. — 21
Lyddon Co. — 55
Lynch Corp. — —

M

Magnus Metal Div., Nat. Lead Co. — —
Main, Charles T., Inc. — 42
Manchester Machine Co. — —
Marietta Concrete Corp. — —
McBride, Edward J., Company — —
Mead Sales Co., The — —
Meinecke, A. M., & Son — —
Meisel Press Mfg. Co. — 54
Merrick Scale Company — —
Michigan Steel Casting Co. — 42
Monsanto Chemical Co. — —
Montague Machine Co. — —
Moore & Munger — 52
Moore & White Co. — —
Moorhead Electrical Machinery Co. — 58
Morden Machines Co. — —
Morey Paper Mill Supply Co. — —
Morningstar, Nicol, Inc. — —
Mount Hope Machinery Co. — —
Murray, D. J., Mfg. Co. — —

N

Nash Engineering Co. — —
National Adhesives — —
National Aluminate Corp. — —
National Aniline Div., Allied Chem. & Dye Corp. — —
National Starch Products, Inc. — 15
National Tube Co. — 13
Naugatuck Chem. Div., U. S. Rubber Co. — 31
Niagara Alkali Co. — —
Nichols Engrg. & Research Co. — 35
Nopco Chemical Co. — 55
Northern Engraving & Mch. Co. — 48
Norton Co. — —

P

Paper & Industrial Appliances — —
Parsons & Whittemore — 55
Perkins, B. F., & Son Co. — —
Perkins Goodwin Co. — —
Peabody Engrg. Co. — —
Permutit Company, The — —
Photovolt Corp. — —
Pittsburgh Plate Glass Co. — —
Poirier Control Co. — —
Potdevin Machine Co. — 64
Powell, William, Co. — —
Price & Pierce, Ltd. — 66
Pulp & Paper Trading Co. — —
Pusey & Jones Corp., The — 43

R

Railway Supply & Mfg. Co. — 64
Raymond, Chas. P., Service, Inc. — 56
Record Fdy. & Machine Co. — —
Red Bay Manufacturing Co., Inc. — —
Reichhold Chemicals, Inc. — 20
Reidel, Gus, & Son — —
Reliance Elec. & Engrg. Co. — 16 & 17
Research Corporation — —
Restigouche Co., Ltd. — —
Rice Barton Research Corp. — —
Rogers, S. C., & Co. — —
Rohm & Haas Co. — —
Roots-Connersville Blower Corp. — —
Ross, J. J., Co. — —
Ross, J. O., Engrg. Corp. — —
Ross Paper Machinery Co. — 57
Rust Engineering Co. — —

S

Sandusky Fdy. & Mch. Co. — 59
Seaboard Air Line R.R. Co. — —
Shartle Brothers Machine Co. — 6
Shuler & Benninghofen — —
Simonds Saw & Steel Co. — —
Sinclair Refining Co. — 8
Sirrine, J. E., Co. — —
SKF Industries, Inc. — —
Smidth, F. L., & Co. — —
Smith & Winchester Mfg. Co. — —
Sprout, Waldron & Co., Inc. — —
Squier Corp., The — —
Stebbins Engrg. & Mfg. Co. — —
Stein, Hall & Co., Inc. — —
Stephens Adamson Mfg. Co. — —
Stickle Steam Specialties Co. — —
Stowe Woodward Inc. — —
Sun Oil Co. — —
Sutherland Refiner Corp. — 42
Swenson Evaporator Co. Front Cover

T

Taylor Instrument Co.'s — —
Taylor Stiles & Co. — —
Tennessee Coal, Iron & R. R. Co. — 13
Testing Machines, Inc. — —
Texas Co., The — 4
Texas Gulf Sulphur Co. — —
Thwing-Albert Instrument Co. — —
Tide Water Assoc. Oil Co. — —
Timken Roller Bearing Co. — —
Tissue Converting Corp. — —
Titanium Pigment Corp. — 45
Towmotor Corp. — 53

U

United Carbon Co., Inc. — 62
U. S. Rubber Co. — 31 & 69
U. S. Steel Corp. — 13
United States Steel Export Co. — 13
United States Steel Supply Co. — 13

V

Valley Iron Works Co. — —
Vanderbilt, R. T., Co. — —
Vaughan, Frank C. — —
Virginia Smelting Co. — 61

W

Waldron, John, Corporation — —
Walworth Co. — —
Waterbury Felt Co. — —
Waterbury, H., & Sons Co., Inc. — —
Weber, H. G., & Co., Inc. — —
Wellman Engineering Co. — —
Western Gear Works — —
Western Precipitation Corp. — —
Westinghouse Elect. Corp. — —
West Virginia Pulp & Paper Co. — 66
Weyerhaeuser Timber Co. — —
Whiting Corp. — Front Cover
Williams Apparatus Co. — —
Williams Gray Company — —
Worthington Pump & Machy. Corp. — 49
Wyandotte Chemicals Corp. — —

BUSINESS STAFF

Arthur E. Gordon, Business Mgr. — **Frederick B. Grosse,** Production Mgr.

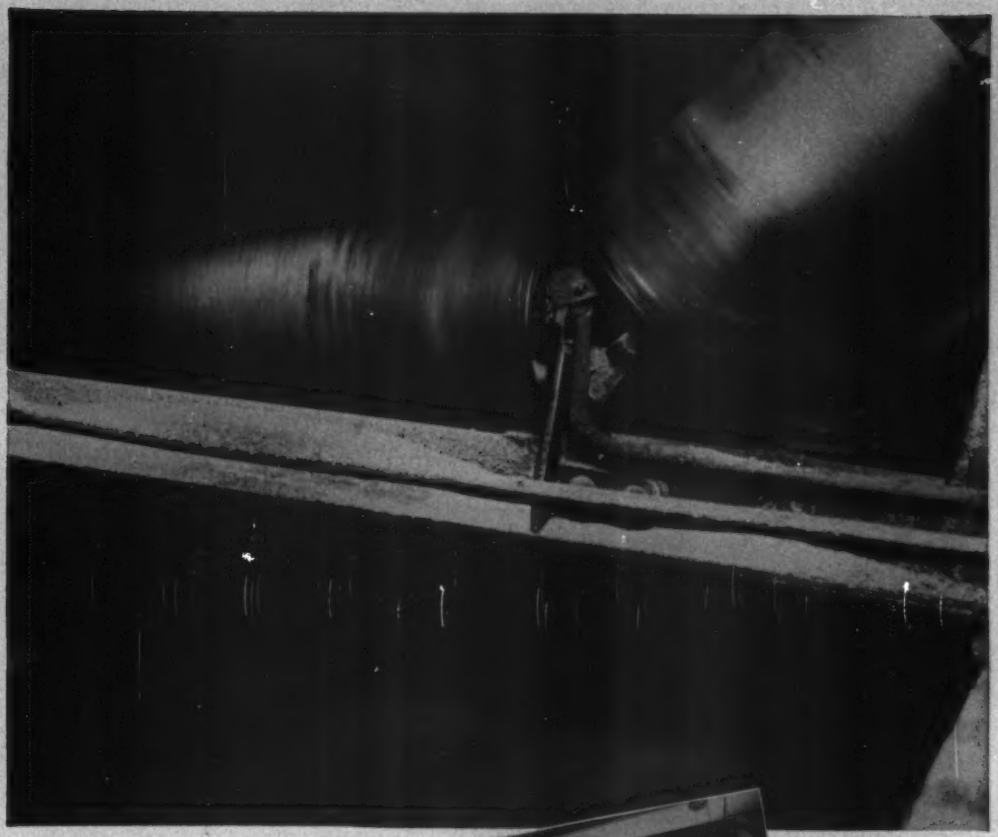
Bruce E. Brown, George Heitzeberg
15 West 47th Street, New York, 19, N. Y. PLaza 7-2370

H. K. Vinton, Franklyn H. Olsen
Room 1030, 79 West Monroe St., Chicago, 3, Ill. CEntral 6-2784

McDonald-Thompson Company

LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391 — SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-6647
SEATTLE, 1, WASH.: Terminal Sales Bldg. MAin 3868 — PORTLAND, 4, ORE.: 115 SW Fourth Ave. ATwater 7401
DENVER, 2, COLO.: 317 Railway Exchange Bldg. MA 3733
EDWARD M. BUCK, 4552 Rheims Place, DALLAS, 5, TEXAS. Justin 8-8278

What's U. S. Rubber done to increase belt flexibility?



In a western paper mill, this conveyor belt operates over carrying idlers having a 45 degree angle between the horizontal and inclined rolls. To take this unusual angle, the belt (U. S. Rubber's patented Style XN) has nylon in the filler strands of the carcass fabric, providing unusual flexibility and inherent resistance to bending fatigue. The use of 45 degree angle carrying idlers increases belt capacity and reduces spillage.

This is another example of how U. S. Rubber belting engineers contribute to the advancements in belt conveyor haulage.

PATENTED NYLON CONSTRUCTION
Style XN conveyor belt carrying wood chips on 45 degree idlers up incline. Crosswise flexibility of its construction assures proper training.

Product of U.S.RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

For Longest V

MATCH YOUR BELTS TO YOU

FOR every V-drive, there's *one* belt constructi
that's right—combining materials and design
handle drive requirements longest, and at t
lowest cost in the long run. That's why the G.T.
—Goodyear Technical Man—has developed t
most complete line of V-belt constructions in t
industry.

Ask your nearest Goodyear distributor—or the G.T.M.—about

E-C CORD V-BELTS for high-speed drives with small pulleys, short centers.

COMPASS-V-STEEL BELTS for maximum load capacity, high heat resistance, low power consumption and minimum space; speeds from 10 to 10,000 FPM. In sizes up to 114 inches.

STEEL CABLE V-BELTS for longer drives and heavier HP loads.

HY-T BELTS built with synthetic fibers—give nylon strength without the stretch on severest heavy-duty drives; oil-resistant construction.

RAYON E-C CORD BELTS for larger, normal-speed drives with heavy shock loads and severe starting conditions.

OPEN-END V-BELTING for line-shaft drives, no-take-up drives and dismantle-to-install drives; built to operate with and really hold metal fasteners.

AUTOMOTIVE FAN BELTS and FRACTIONAL HORSEPOWER BELTS for miscellaneous light machinery drives employing single belts.

One of these constructions will be *your* answe
longer, more economical V-belt service. So ask
G.T.M. for details, by writing Goodyear, Akron
Ohio.

GOOD

THE GREATEST

V-Belt Service

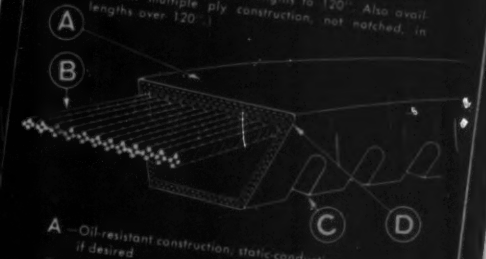
UR DRIVE

ction
gn to
the
T.M.
l the
the

GOODYEAR INDUSTRIAL RUBBER PRODUCTS

GR-S-Specified HY-T V-BELTS for Short-Center Heavy-Duty Drives

(Construction shown for lengths to 120". Also available in multiple ply construction, not notched, in lengths over 120".)



A—Oil-resistant construction; static-conducting if desired.

B—Compass principle of single-plane endless cords in load-carrying section. High-tensile synthetic fiber for high strength and low elongation.

C—Notches close rounding pulleys for more pull; open between pulleys to allow heat dissipation.

D—Cover designed for maximum flexibility and resistance to wear.

er to
k the
n 16,

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS *built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.*

YEAR

NAME IN RUBBER

B-C Cord, Compass, HY-T—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio